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SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Shelley Self Examiner #: 179400 Date: 5/10/05
Art Unit: 3725 Phone Number 302-4524 Serial Number: 10/070918
Mail Box and Bldg/Room Location: RAV 7A54 Results Format Preferred (circle): PAPER DISK E-MAIL

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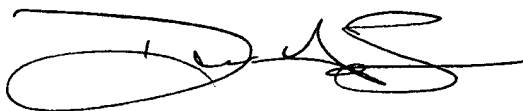
Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Process & Plant For Separating the Constituents of Waxes
Inventors (please provide full names): TIES Gerard Deboillel Belgium

Earliest Priority Filing Date: 11/28/97

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Search Claims 17, 25-34 (Amended claims)
Filed 2/4/05



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	Type of Search	Vendors and cost where applicable
Searcher: <u>Janine Horigan</u>	NA Sequence (#) _____	STN _____
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File 94:JICST-EPlus 1985-2005/Mar W3
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File 144:Pascal 1973-2005/May W1
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File 315:ChemEng & Biotec Abs 1970-2005/Apr
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File 323:RAPRA Rubber & Plastics 1972-2005/Apr
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File 40:Enviroline(R) 1975-2005/Apr

File 110:WasteInfo 1974-2002/Jul
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File 19:Chem.Industry Notes 1974-2005/ISS 200518
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File 30:AsiaPacific 1985-2005/May 04
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Set	Items	Description
S1	3274843	RUBBER OR PLASTIC? ? OR POLYMER?? OR ELASTOMER??
S2	2304716	SEPARAT?
S3	128914	NEUTRALIZ? OR NEUTRALIS?
S4	405808	RECYCL? OR REUSE? ? OR REUSING OR REUTILI?
S5	11650	RE() (USE? ? OR USING OR UTILI?)
S6	1165734	RECOVER??? OR RECLAIM??? OR SALVAG???
S7	77099	NAOH OR SODIUM()HYDROXIDE OR CAUSTIC() (SODA OR LIQUID? ?) - OR ETCHING()LIQUID? ? OR MOLTEN()PURE()BASE
S8	2144951	NA OR SODIUM OR ALKALI()METAL OR ALKALINE OR SALT OR SALTS
S9	573663	CUT OR CUTS OR CUTTING OR CHOP? ? OR CHOPP???
S10	3088022	FRAGMENT? OR PIECE OR PIECES OR PARTICLE? ?
S11	8500772	DECONSOLIDAT? OR REACT? OR REDUC??? OR LIQUIDI? OR (BREAK?- ?? OR BROKEN) (2W)DOWN
S12	163	S1 AND S2 AND S3 AND S4:S6
S13	69	S12 AND S7:S8
S14	6	S13 AND S9:S10 AND S11
S15	5	RD (unique items)[not relevant]
S16	63	S13 NOT S14
S17	35	S1/TI,DE AND S16
S18	3	S17/1998:2000

S19 2 S17/2001:2005
 S20 191922 (S2 OR S4:S6 OR S11) (3N)S1
 S21 11 S20 AND S16
 S22 30 S17 NOT S18:S19
 S23 35 S21:S22
 S24 34 RD (unique items)
S25 34 Sort S24/ALL/PY,A
 S26 118 S12 NOT (S14 OR S17 OR S21)
 S27 35 S20 AND S26
 S28 35 RD (unique items)
 S29 6 S28/1998:2005
 S30 29 S28 NOT S29
S31 29 Sort S30/ALL/PY,A
 S32 354480 S1/TI,DE AND (S2/TI,DE OR S4/TI,DE OR S5/TI,DE OR S6/TI,DE
 OR S11/TI,DE)
 S33 0 (S26 AND S31) NOT (S14 OR S17 OR S21 OR S27)
 S34 57 S1/TI,DE AND S26
 S35 56 RD (unique items)
 S36 10 S35/1998:2005
 S37 46 S35 NOT S36
 S38 46 Sort S37/ALL/PY,A
 S39 26 S34 NOT (S14 OR S17 OR S21 OR S27)
 S40 25 RD (unique items)
 S41 21 S40 AND S37
S42 21 Sort S41/ALL/PY,A
 S43 649346 MELT??? OR OVEN
 S44 3989800 REACTOR? ? OR REACTION OR LIQUIDIZ? OR LIQUIDIS? OR DEVULC-
 ANI?
 S45 3736906 SORT???? OR MAGNET? OR RECOVER?
 S46 13661 (CLOSE OR CLOSED) () (SYSTEM? ? OR CIRCUIT()SYSTEM? ?)
S47 1 S32 AND S43 AND S44 AND S2 AND S3 AND S45 [too recent]
 S48 0 S1 AND S43 AND S44 AND S2AND S3 AND S45
 S49 3 S1 AND S43 AND S44 AND S2 AND S3 AND S45
S50 3 RD (unique items)[not relevant]
 S51 12 S43 AND S44 AND S45 AND S2 AND S3
 S52 9 S51 NOT (S14 OR S17 OR S21 OR S27 OR S34 OR S49)
 S53 9 RD (unique items)
S54 9 Sort S53/ALL/PY,A
 S55 121 S32 AND S46
 S56 0 S55 AND S2 AND S3
 S57 121 S55 NOT (S14 OR S17 OR S21 OR S27 OR S34 OR S49 OR S51)
 S58 107 RD (unique items)
 S59 44 S58/1998:2005
 S60 63 S58 NOT S59
 S61 12 S46/TI,DE AND S60
S62 12 Sort S61/ALL/PY,A
 S63 28 S46/TI,DE AND S32
 S64 16 S63 NOT (S14 OR S17 OR S21 OR S27 OR S34 OR S49 OR S51 OR -
 S61)
 S65 16 RD (unique items)
 S66 14 S65/1998:2005
S67 2 S65 NOT S66

25/7/28 (Item 28 from file: 110)

DIALOG(R)File 110:WasteInfo

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00104516

A method for converting polyester from wastes into usable raw materials.

United Resource Recovery Corp

Eur. Patent Appl. No. 706,540. Various pp. (17 Apr. 1996)

RECORD TYPE: ABSTRACT

A method for **recovering** polyester from waste materials, particularly those which contain high levels of contaminant is claimed. The polyester containing waste is mixed with a **metal hydroxide** - preferably **sodium**, calcium, magnesium, or potassium. The mixture is indirectly heated so that it is saponified. The polyester is converted to the corresponding acid **salt** of a polyorganic acid and a polyol which evaporates. The evaporated polyol is then **separated** from the acid **salt**. The method, it is claimed, is particularly useful for wastes containing polyethylene terephthalate (PET) or polybutylene terephthalate (PBT), such as X-ray and photographic film and **plastic** bottles. Using **sodium hydroxide** as the alkali, the metal acid **salt** produced by the process would be disodium terephthalate and the polyol ethylene glycol or butylene glycol.

25/7/30 (Item 30 from file: 94)

DIALOG(R)File 94:JICST-EPlus

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03432748 JICST ACCESSION NUMBER: 97A0849695 FILE SEGMENT: JICST-E

Resource recycling by chemical modification of polystyrene sytem resin waste materials.

INAGAKI YASUSHI (1); KUROMIYA MIYUKI (1); NOGUCHI TSUTOMU (1); WATANABE HARUO (1)

(1) Sony Corp., Cent. Res. Lab.

Kagaku to Kogyo, 1997, VOL.50,NO.9, PAGE.1363-1365, FIG.3, REF.2

JOURNAL NUMBER: F0107AAV ISSN NO: 0022-7684 CODEN: KAKTA

UNIVERSAL DECIMAL CLASSIFICATION: 628.34 628.477 678.746.2

LANGUAGE: English COUNTRY OF PUBLICATION: Japan

DOCUMENT TYPE: Journal

ARTICLE TYPE: Commentary

MEDIA TYPE: Printed Publication

ABSTRACT: Technique to sulfonate polystyrene based waste of used household electric appliances etc. to reform it into a water soluble **polymer** and to **recycle** it into resources as a flocculant for water treatment was established. The reforming technique was as follows : polystyrene based waste materials re sulfonated by a sulfonating agent in organic solvent followed by **neutralization** by **sodium hydroxide**, and then solvent is **separated** by evaporation to obtain **sodium** sulfonate polystyrene (SPS).The obtained SPS was confirmed to have excellent effect on aggregation by measurement.

31/7/1 (Item 1 from file: 110)

DIALOG(R)File 110:WasteInfo

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00006708

DEVELOPMENT DOCUMENT FOR EFFLUENT LIMITATIONS GUIDELINES AND NEW SOURCE PERFORMANCE STANDARDS FOR THE FABRICATED AND RECLAIMED RUBBER SEGMENT OF THE RUBBER PROCESSING POINT SOURCE CATEGORY.

Kinch,R.J.

U.S. Environmental Protection Agency, EPA--440-1-74-030-a (PB--241- 916), 251pp. (Dec. 1974).

RECORD TYPE: ABSTRACT

A survey of the **rubber** processing industry in the United States. Industrial processes described, waste products identified and best pollution control technology to meet current legislative requirements detailed. Cost effectiveness considered.

31/7/4 (Item 4 from file: 110)

DIALOG(R)File 110:WasteInfo

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00015856

THE TREATMENT OF INDUSTRIAL WASTES.

Besselièvre, E.B.; Schwartz, M.

McGraw-Hill (1976). 386pp. ISBN--0-07-005047-3. \$17.60.

RECORD TYPE: ABSTRACT

A stage by stage analysis is given of waste management problems and their solution from the consultant engineer's viewpoint. Treatment methods for organic and inorganic wastes reviewed e.g. **neutralization**, coagulation, with special attention to plating and metal finishing industries.

31/7/5 (Item 5 from file: 110)

DIALOG(R)File 110:WasteInfo

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00019741

RECYCLING AND NON-WASTE TECHNOLOGY 1979.

Rossi, B.A.; Nayve, P.A.

Rossi-Nayve Consultancy Services, Inc. P.O. Box 5111, Makati Main Post Office, J.P. Rizal Street, Makati, Metro Manila, Philippines (1979) 222pp. \$13.33.

RECORD TYPE: ABSTRACT

Worldwide waste sources and **recovery** / **recycling** technology extensively described. Wastes include agricultural, chemicals, fisheries, forest products, glass, metals, oil, **plastics**, **rubber** and textiles. Many **recovery** /reclamation processes described including biological, chemical and physical **separation** methods. Costs of some processes given.

31/7/6 (Item 6 from file: 110)

DIALOG(R)File 110:WasteInfo

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00023018

RECOVERY AND ELIMINATION OF INDUSTRIAL WASTE. (IN ITALIAN).

Levis, L.; Fox, R.

AES, Vol. 2, No. 12, pp. 74-81 (Dec. 1980).

RECORD TYPE: ABSTRACT

Treatment centers for liquid or solid industrial wastes are discussed as a solution to ecological problems. These centers can also be used for **recovery** and **recycling** of materials from the waste.

31/7/7 (Item 7 from file: 110)

DIALOG(R)File 110:WasteInfo

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00020424

MERCURY(II) SORPTION BY WASTE RUBBER .

Knocke, W.R.; Hemphill, L.H.

Water Res., Vol. 15, No. 2, pp. 275-282 (1981).

RECORD TYPE: ABSTRACT

Ground, vulcanised tyre **rubber** samples, used in batch laboratory sorption studies, proved to be efficient sorbent material for mercury removal. Of several parameters investigated, pH was most crucial, with optimum range 5.5-6.0. Sulphur-free **rubber** wastes also tested proved equally efficient.

31/7/8 (Item 8 from file: 110)

DIALOG(R)File 110:WasteInfo

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00020134

HANDBOOK OF INDUSTRIAL WASTE DISPOSAL.

Conway, R.A.; Ross, R.D.

Van Nostrand Reinhold, (1980) 582pp. ISBN--0-442-27053-4. \$24.40.

RECORD TYPE: ABSTRACT

Major areas covered include 1) regulations, 2) wastewater equalisation, **neutralisation**, clarification, 3) biological, chemical and physical treatments, 4) sludge dewatering, 5) activated carbon adsorption, 6) solid waste **recovery / reuse**, 7) incineration, 8) pyrolysis and wet air oxidation, 9) land and ocean disposal, 10) hazardous materials disposal, and 11) air pollution control.

31/7/12 (Item 12 from file: 110)

DIALOG(R)File 110:WasteInfo

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00048958

Removal of arsenic, vanadium and/or nickel compounds from spent catecholated polymer

U.S. Department of Energy

U.S. Patent No. 4,659,684. 7pp. (21 Apr. 1987)

RECORD TYPE: ABSTRACT

Spent catecholated polystyrene divinylbenzene **polymer** which has been removed from petroliferous liquid, is acidified with e.g. HCl to pH 1-5 in presence of amine stabiliser to hydrolyse catechol moieties and release V, Ni. **Separated polymer** is treated with e.g. alkali carbonate to release As

31/7/17 (Item 17 from file: 323)

DIALOG(R)File 323:RAPRA Rubber & Plastics

(c) 2005 RAPRA Technology Ltd. All rts. reserv.

00611858

TITLE: CHEMICAL RECYCLING : BACK TO THE ORIGINS

AUTHOR(S): Modini G

SOURCE: Materie Plastiche ed Elastomeri; No.4, April 1995, p.186-91

ISSN: 0025-5459

CODEN: MPELAK JOURNAL ANNOUNCEMENT: 199702 RAPRA UPDATE: 199703

DOCUMENT TYPE: Journal Article

LANGUAGE: Italian

SUBFILE: (R) RAPRA

ABSTRACT: Methods used in the **recycling** of **plastics** are described, and details are given of a chemical **recycling** technique used by Veba Oel

in its plant in Bottrop, Germany. This liquid phase hydrogenation process produces high quality synthetic oils, suitable for use as refinery feedstocks, from mixtures of vacuum distillation residues, scrap **plastics** and other industrial wastes.

31/7/19 (Item 19 from file: 323)

DIALOG(R)File 323:RAPRA Rubber & Plastics

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00588908

TITLE: CHEMICAL RECYCLING OF PLASTICS

AUTHOR(S): Pilati F

CORPORATE SOURCE: Modena, University

SOURCE: Chimica e l'industria; 77, No.2, Feb.1995, Suppl., p.4-6

JOURNAL ANNOUNCEMENT: 199607 RAPRA UPDATE: 199613

DOCUMENT TYPE: Journal Article

LANGUAGE: Italian

SUBFILE: (R) RAPRA

ABSTRACT: Economic and ecological aspects of chemical **recycling** are examined, and the application of such processes to the **recovery** of monomers and intermediates from PETP, polyamides, polyurethanes, polycarbonates, unsaturated polyesters, polyacetals, PMMA and PS is discussed. 17 refs.

31/7/27 (Item 27 from file: 110)

DIALOG(R)File 110:WasteInfo

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00004849

RECYCLING ZINC IN VISCOSE RAYON PLANTS BY TWO STAGE PRECIPITATION.

Anon.

U.S. Environ. Prot. Agency, 10pp. (1974).

RECORD TYPE: ABSTRACT

In the Enka process, lime added to pH6 precipitating impurities. After **separation**, supernate contacted with sludge containing zinc hydroxide. pH raised to 10. Effluent contains 1ppm zinc. Economically sound.

42/7/1 (Item 1 from file: 103)

DIALOG(R)File 103:Energy SciTec

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00383284 EDB-78-077687

Author(s): Baskerville, C.

Title: Process of producing a plastic material (Patent)

Patent No.: US 1231985

Patent Date Filed: Filed date 13 Nov 1914

Publication Date: 3 Jul 1917

p v

Language: English

Abstract: A process is described of **recovering** asphaltic material which comprises heating acid sludge obtained as a byproduct in the refining of petroleum oil by means of sulfuric acid, sufficiently to cause a **separation** of at least a portion of the oil contained therein, but below the temperature necessary for producing any considerable amount of carbonization of the sludge, removing the asphaltic portion of the

sludge and intimately mixing it with a **neutralizing** agent.

42/7/2 (Item 2 from file: 110)
DIALOG(R)File 110:WasteInfo
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00019945
11TH MID-ATLANTIC INDUSTRIAL WASTES CONFERENCE PROCEEDINGS, PENNSYLVANIA
STATE UNIVERSITY, 15-17 JULY 1979.

Anon.
Pennsylvania State University. U.S. Environmental Protection Agency
(1979) 244pp. Lib. Cong. Cat. No. 79-66187.
RECORD TYPE: ABSTRACT
Operating waste-control technologies and waste treatment research
projects are described. Included are **metals removal by chemicals
precipitation**, economic assessments of treatment processes, PCB technology,
biological treatment, ultraviolet radiation for wastewater disinfection,
landfill disposal, incinerator design and operation, and phenols removal.

42/7/11 (Item 11 from file: 35)
DIALOG(R)File 35:Dissertation Abs Online
(c) 2005 ProQuest Info&Learning. All rts. reserv.
01335067 ORDER NO: AAD94-06006
AN INVESTIGATION INTO THE STRUCTURE AND BREAKUP OF AGGREGATED LATEX
PARTICLES (FLOCCULATION)
Author: DURALI, MEHDI
Degree: PH.D.
Year: 1993
Corporate Source/Institution: LEHIGH UNIVERSITY (0105)
ADVISER: CESAR A. SILEBI
Source: VOLUME 54/09-B OF DISSERTATION ABSTRACTS INTERNATIONAL.
PAGE 4699. 230 PAGES

Colloidal particles can form aggregates either through charge
neutralization using electrolytes or by the formation of bridges among the
particles by long chain **polymers**. Although a useful process in some
industries such as water treatment and mineral purification, aggregate
formation in emulsion polymerization and latex technology is a faulty
reaction which causes the waste of raw materials and variation in the final
properties of the product. The study of the mechanisms by which aggregates
are formed and the effect of process variables including electrolyte
concentration and agitation speed on the structure of aggregates can
provide valuable industrial and academic information.

Coagulation kinetics of polystyrene latex particles at different
electrolyte concentrations corresponding to slow and rapid Brownian
coagulation was studied using a capillary hydrodynamic fractionation (CHDF)
unit to fractionate the aggregates and the rate constants for the
singlet-singlet, singlet-doublet and singlet-triplet collisions were
calculated using a parameter search routine. The binary rate constants were
in agreement with the lower range of values reported in the literature. The
fractal dimension of aggregates formed under rapid and slow coagulation
conditions were determined which showed good agreement with the theoretical
values.

Flocculation with model associative **polymers** was investigated as a
function of **polymer** characteristics and two different mechanisms was

detected for the cluster formation. At low **polymer** concentrations (below the full particle surface coverage), particles were bridged together by the **polymer** chains while at concentrations beyond the full coverage, a large network was formed between the free **polymer** in the solution and the ones adsorbed on the surface of particles.

Floc breakup was studied by two **separate** techniques of sonication and shearing. Aggregates formed at both high and low electrolyte concentrations were tested to evaluate the floc strength. Aggregates formed with high electrolyte concentration were stronger than the other case and displayed a larger aggregate size at a given breakup condition. Neither of the two methods were able to break the aggregates completely, but sonication showed a higher efficiency in floc breakup than the shear force. About sixty percent of primary particles were **recovered** by sonication compared to around thirty percent for shearing.

42/7/12 (Item 12 from file: 110)

DIALOG(R)File 110:WasteInfo

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00090204

Method of recovering caprolactam from mixed waste

BASF Corp

US Patent No. 5,241,066. 4pp. (31 Aug. 1993)

RECORD TYPE: ABSTRACT

A process for the **recovery** of caprolactam from mixed **polymeric** waste containing both polycaprolactam and materials that are insoluble in acidic solvents for polycaprolactam is described. The waste may be polycaprolactam/ polyethylene terephthalate bicomponent fibre. The process comprises: agitating the waste in an acidic solvent in which polycaprolactam dissolves for a time sufficient to dissolve most of the polycaprolactam, but without degrading the acid insoluble materials; **separating** out the acid insoluble materials from the polycaprolactam-containing solution; adding the polycaprolactam-containing solution to a depolymerisation reactor without substantial precipitation occurring; and depolymerising the polycaprolactam solution using superheated steam and a depolymerisation catalyst (which can be the acidic solvent) to produce caprolactam that is substantially free from ethylene glycol. The acidic solvent can be one of formic acid, sulphuric acid, hydrochloric acid, acetic acid and phosphoric acid. The acid insoluble materials may also be **recovered**.

42/7/21 (Item 21 from file: 110)

DIALOG(R)File 110:WasteInfo

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00004237

MATERIALS RECOVERY AND RECYCLING IN THE USA.

Henstock, M.

Resources Policy, Vol. 1, No. 3, pp. 171-175 (Mar. 1975).

RECORD TYPE: ABSTRACT

Review of processes, actual or potential, being studied in the U.S. to maximise resource conservation. Large number of examples briefly described, mainly non-ferrous metal **recovery** and reclamation.

54/7/1 (Item 1 from file: 103)

DIALOG(R)File 103:Energy SciTec
(c) 2005 Contains copyrighted material. All rts. reserv.
01632804 FRG-84-09550; EDB-85-139581
Author(s): Roebke, G.; Humbek, B.
Title: Rubbish removal by gasification with recovery of material
Original Title: Muellentsorgung durch Vergasung bei Werkstoffrueckgewinnung
Patent No.: DE 3011157 A
Patent Date Filed: Filed date 22 Mar 1980
Publication Date: 1 Oct 1981

p 10

Language: German

Availability: Deutsches Patentamt, Muenchen, Germany, F.R.

Abstract: The rubbish is first reduced to a grain size of ≤ 2 mm and then gasified in a **reactor**. Gasification occurs autothermally in the presence of oxygen at temperatures above the ash **melting** point at pressures of 10-200 bar ata; the synthetic gases and the residues are then cooled and the solidified residues of combustion removed. Sulphur occurs in the product gas from rubbish gasification in the form of H_2S . The small quantity of product gas compared to the flue gas in combustion of rubbish is taken to a much less expensive gas washing plant, in order to be able to make economic use of the hydrogen sulphide in a subsequent Claus plant. Any HCl formed remains in the condensate and can be removed after **neutralization**. Glass, **magnetic** materials and aluminium are **separated** from the rubbish before gasification.

62/7/2 (Item 2 from file: 323)

DIALOG(R)File 323:RAPRA Rubber & Plastics

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00122666

TITLE: DEPENDENCE OF THE CHARACTERISTICS OF POLYCAPROLACTAM AT EQUILIBRIUM STATE ON THE POLYMERISATION CONDITIONS IN CLOSED SYSTEMS

AUTHOR(S): FURUKAWA K; YOSHIZAKI O

SOURCE: Kobunshi Ronbunshu; 35, No.5, May 1978, p.291-8

ISSN: 0386-2186

CODEN: KBRBA3 JOURNAL ANNOUNCEMENT: 197810 RAPRA UPDATE: 198201

DOCUMENT TYPE: Journal Article

LANGUAGE: Japanese

ABSTRACT: THE PURPOSE OF THIS INVESTIGATION WAS TO DETERMINE THE CORRELATIONS BETWEEN THE CHARACTERISTICS OF POLYCAPROLACTAM AT EQUILIBRIUM STATE AND THE INITIAL COMPOSITIONS, AND BETWEEN THE FORMER AND POLYMERISATION TEMPERATURE IN THE HYDROLYTIC POLYMERISATION OF CAPROLACTAM (CL). THE INITIAL COMPOSITION WAS CL (1 MOL), WATER (UNDER 0.3 MOL), AND A VISCOSITY STABILISER (UNDER 0.05 MOL) WHICH WAS ACETIC ACID, BUTYLAMINE OR A MIXTURE OF BOTH. THE EQUILIBRATED POLYMER WAS CHARACTERISED BY QUANTITATIVE ANALYSIS OF CL, CYCLIC OLIGOMERS, CONCENTRATION OF END GROUPS, AND POLYMER INTRINSIC VISCOSITY. ASSUMING EQUAL REACTIVITY OF THE STABILISER TOWARDS FUNCTIONAL END GROUPS OF THE POLYMER, THE EQUILIBRIUM CONSTANTS FOR THE HYDROLYTIC RING-OPENING REACTION OF CL, THE POLYCONDENSATION REACTION OF AMINO END GROUP WITH CARBOXYLIC END GROUP, AND FOR THE POLYADDITION REACTION OF CL TO AMINO END GROUP WERE OBTAINED. 10 REFS.

62/7/12 (Item 12 from file: 323)

DIALOG(R)File 323:RAPRA Rubber & Plastics
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00495109

**TITLE: DECOMPOSITION OF POLYETHYLENE TEREPHTHALATE WITH WATER IN A CLOSED
SYSTEM AS A METHOD FOR THE UTILISATION OF WASTE PRODUCTS**

AUTHOR(S): Michalski A

CORPORATE SOURCE: Poland, Institute of Chemical Fibres

SOURCE: Fibres & Textiles in Eastern Europe; 1, No.3, May/June 1993,
p.38-40

ISSN: 1230-3666

JOURNAL ANNOUNCEMENT: 199401 RAPRA UPDATE: 199324

DOCUMENT TYPE: Journal Article

LANGUAGE: English

SUBFILE: (R) RAPRA

ABSTRACT: The decomposition of PETP with water in a **closed system** at elevated temps. was studied with particular reference to the progressive stages of hydrolysis, the effect of the catalysts present in the polymer on the process and its yield, and the pH of the reaction medium. Based on the results obtained, technology was developed for processing of PETP waste into terephthalic acid. 6 refs.

67/7/2 (Item 1 from file: 144)

DIALOG(R)File 144:Pascal

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06067867 PASCAL No.: 85-0329420

**Crystallization of bisphenol-A polycarbonate induced by organic salts:
chemical modification of the polymer . II: Model reactions**

BAILLY C; LEGRAS R; MERCIER J P

Univ. Catholique Louvain, lab. hauts polymeres, Louvain-la-Neuve 1348,
Belgium

Journal: Journal of polymer science. Polymer physics edition, 1985, 23 (2) 355-366

ISSN: 0098-1273 Availability: CNRS-6199A2

No. of Refs.: 19 ref.

Document Type: P (Serial) ; A (Analytic)

Country of Publication: USA

Language: English

File 98:General Sci Abs/Full-Text 1984-2004/Dec
 (c) 2005 The HW Wilson Co.
 File 9:Business & Industry(R) Jul/1994-2005/May 10
 (c) 2005 The Gale Group
 File 15:ABI/Inform(R) 1971-2005/May 10
 (c) 2005 ProQuest Info&Learning
 File 16:Gale Group PROMT(R) 1990-2005/May 10
 (c) 2005 The Gale Group
 File 160:Gale Group PROMT(R) 1972-1989
 (c) 1999 The Gale Group
 File 148:Gale Group Trade & Industry DB 1976-2005/May 11
 (c)2005 The Gale Group
 File 481:DELPHEES Eur Bus 95-2005/May W1
 (c) 2005 ACFCI & Chambre CommInd Paris
 File 624:McGraw-Hill Publications 1985-2005/May 10
 (c) 2005 McGraw-Hill Co. Inc
 File 635:Business Dateline(R) 1985-2005/May 10
 (c) 2005 ProQuest Info&Learning
 File 636:Gale Group Newsletter DB(TM) 1987-2005/May 11
 (c) 2005 The Gale Group
 File 369:New Scientist 1994-2005/Apr W1
 (c) 2005 Reed Business Information Ltd.
 File 370:Science 1996-1999/Jul W3
 (c) 1999 AAAS

Set	Items	Description
S1	1962573	RUBBER OR PLASTIC? ? OR POLYMER?? OR ELASTOMER??
S2	1916610	SEPARAT?
S3	43942	NEUTRALIZ? OR NEUTRALIS?
S4	453257	RECYCL? OR REUSE? ? OR REUSING OR REUTILI?
S5	78077	RE() (USE? ? OR USING OR UTILI?)
S6	1347134	RECOVER??? OR RECLAIM??? OR SALVAG???
S7	21837	NAOH OR SODIUM()HYDROXIDE OR CAUSTIC() (SODA OR LIQUID? ?) - OR ETCHING()LIQUID? ? OR MOLTEN()PURE()BASE
S8	563230	NA OR SODIUM OR ALKALI()METAL OR ALKALINE OR SALT OR SALTS
S9	2863761	CUT OR CUTS OR CUTTING OR CHOP? ? OR CHOPP???
S10	1259666	FRAGMENT? OR PIECE OR PIECES OR PARTICLE? ?
S11	4867476	DECONSOLIDAT? OR REACT? OR REDUC??? OR LIQUIDI? OR (BREAK?- ?? OR BROKEN) (2W)DOWN
S12	230853	MELT??? OR OVEN
S13	518002	REACTOR? ? OR REACTION OR LIQUIDIZ? OR LIQUIDIS? OR DEVULC- ANI?
S14	2159026	SORT???? OR MAGNET?? OR RECOVER?
S15	8073	(CLOSE OR CLOSED) () (SYSTEM? ? OR CIRCUIT()SYSTEM? ?)
S16	14	S1(S)S2(S)S3(S)S4:S6
S17	5	S7:S8 AND S16
S18	4	RD (unique items)
S19	9	S16 NOT S17
S20	7	RD (unique items)
S21	176	S1(S)S15
S22	25	S4:S6(S)S21
S23	25	S22 NOT S16
S24	23	RD (unique items)
S25	4	S24/1998:2005
S26	19	S24 NOT S25
S27	19	Sort S26/ALL/PD,A
S28	0	S1 AND S12(S)S13(S)S14(S)S2(S)S3

S29 158 S1 AND S12 AND S13 AND S14 AND S2 AND S3
S30 0 S15AND S29
S31 4 S15 AND S29
S32 4 S31 NOT (S16 OR S22) [not relevant]

18/3,K/2 (Item 1 from file: 160)
DIALOG(R)File 160:Gale Group PROMT(R)
(c) 1999 The Gale Group. All rts. reserv.
01331543

Use electrodialytic membranes for waste recovery.

CHEMICAL ENGINEERING March 3, 1986 p. 42-431

Aquatech Systems' new electrodialytic process enables industrial chemical wastes to be **recovered** in a form that makes them easy to **recycle**. Many industrial wastes are either **salts** that are the **neutralized** acid byproducts of manufacturing processes or the acids themselves. Aquatech's process allows the wastes to be **recovered** as the original acids or bases. Waste **salts** enter a chamber containing up to 200 individual cells and are **separated** into their acid and base constituents through an electrically driven reaction. The firm's electrodialytic cell is composed of 3 zones **separated** by individual membranes. A bipolar membrane in the center of the cell exhibits electronegative properties...

... side and electropositive properties on the other. The membrane is a composite of ion-exchanged **polymers** and is placed between anionic- or cationic-transporting monopolar membranes. The type of waste to...

... year based on normal use and handling. Article discusses spent pickle liquor regeneration and sulfate **recovery** from fluegas desulfurization...

20/3,K/1 (Item 1 from file: 15)
DIALOG(R)File 15:ABI/Inform(R)
(c) 2005 ProQuest Info&Learning. All rts. reserv.
00973658 96-23051
3 Rs of lead-acid batteries: Reclaiming, recycling, reusing
Steinbrunner, William L
Ward's Auto World v31n1 PP: 17 Jan 1995
ISSN: 0043-0315 JRNL CODE: WAW
WORD COUNT: 678

...TEXT: lead smelters. There the lead plates of a battery are melted and refined and the **plastic** is **separated** and sent to a reprocessor. Purified lead is delivered to battery manufacturers and other lead-use industries. The acid is collected and either **recycled** or **neutralized**. Less than 20% of the lead used to make lead-acid batteries today is virgin...

20/3,K/2 (Item 2 from file: 15)
DIALOG(R)File 15:ABI/Inform(R)
(c) 2005 ProQuest Info&Learning. All rts. reserv.
00690950 93-40171
Process reclaims polymer content of fibers in discarded carpets

Leaversuch, Robert D
Modern Plastics v70n4 PP: 41-42 Apr 1993
ISSN: 0026-8275 JRNL CODE: MPT
ABSTRACT: United **Recycling** Inc. (URI) appears to have found a viable feedstock for **recycling**: **reclaiming** the **polymer** content of scrap carpet. The initial use is tack strip, stripping to which carpet edges are nailed during installation. Should carpet **reclaim** systems proliferate as

expected, close to 5 billion lb./yr. in **recycling** feedstocks may emerge for use by extruders and molders. Possible applications are **recycling** bins, planters, and roll cores and tubes used to hold carpet or film. URI has developed a proprietary technology for shredding carpets, **separating** fibers by **polymer** type, and then decontaminating, granulating, and pelletizing the material. URI claims its system removes virtually all adhesives while **neutralizing** the effects of any residuals. A first step for URI was to find a large...

20/3,K/4 (Item 2 from file: 16)
DIALOG(R)File 16:Gale Group PROMT(R)
(c) 2005 The Gale Group. All rts. reserv.
02949306 Supplier Number: 43990126
Patents: A Texas inventor makes a try at recycling the materials in disposable diapers

The New York Times, pC2
July 26, 1993
Language: English Record Type: Abstract
Document Type: Newspaper; General
ABSTRACT:

A piece of equipment intended to **recycle** disposable diapers has been patented by inventor Dana L Watson of Wichita Falls, TX. The...
...machines. The diapers are first washed with soap and water and a chemical intended to **neutralize** the superabsorbent **polymer** in the diaper so it will no longer absorb water. The **polymer**, **plastic** backing and cellulose **separate**. The system could also be used to remove ink from newspapers or magazines. Pellerin Milnor...

20/7/6 (Item 1 from file: 160)
DIALOG(R)File 160:Gale Group PROMT(R)
(c) 1999 The Gale Group. All rts. reserv.
00741103
Gould's new technology for battery lead recovery meets EPA and OSHA standards: 1.

Chemical Engineering March 8, 1982 p. 17
5 micro-g/m3 lead emissions, and 50 micro-g/m3 for 8-hr workplace exposure. Batteries are broken up and crushed, then dropped into an aqueous solution for physical **separation**. Lead-alloyed parts sink, while lighter materials (**plastics** and **rubber**) are floated off for **recovery**. Lead oxide and sulfate residues remain suspended in the solution, while battery acid is **neutralized** and discarded. The **recovered** lead is placed in a 2-stage reverberatory furnace, producing soft unalloyed lead and slag. Total lead production will be 55,000 tpy (roughly 66% soft lead). Baghouses are said to be 99.98% efficient and will remove lead particles, along with venturi scrubbers using soda ash will confine sulfur emissions. Paul Bergsoe & Sons (Denmark) is building a 30,000-35,000 tpy plant in St Helens, Ore, that will consume batteries fed whole into a single-shaft furnace to **recover** battery lead.

27/3,K/6 (Item 6 from file: 160)
DIALOG(R)File 160:Gale Group PROMT(R)
(c) 1999 The Gale Group. All rts. reserv.
02057997

ICI has just built the US's first polyethersulfone (PES) plant
Chemical Engineering November 7, 1988 p. 19,21
ISSN: 0009-2460

... the solution is polymerized, using a large amount of potassium chloride. The potassium chloride is **recovered** via liquid-liquid extraction, although the Hillhouse plant uses solid-liquid extraction. The molten **polymer** is filtered to remove impurities, granulated under water and dried. The plant uses a totally **closed system** to prevent product contamination.

27/3,K/7 (Item 7 from file: 16)
DIALOG(R)File 16:Gale Group PROMT(R)
(c) 2005 The Gale Group. All rts. reserv.
01301393 Supplier Number: 41524910
Fast-food firms in drive for massive PS reclaim
Modern Plastics, p53
Sept, 1990

Language: English Record Type: Abstract
Document Type: Magazine/Journal; Trade
ABSTRACT:

...PS-alternative resin that will dissolve when immersed in a water and alkaline bath. The **polymer** can then be precipitated back into usable form and the remaining waste can be reduced to biomass or compost in a **closed system**. In the interim, McDonald's plans to increase its use of post-consumer PS **reclaim** and will buy \$10 mil/yr worth of **recycled** -content items to stimulate the **recycling** industry.
The use of plastics in durable goods totals 8.8 mil lb/yr, including...

27/3,K/8 (Item 8 from file: 16)
DIALOG(R)File 16:Gale Group PROMT(R)
(c) 2005 The Gale Group. All rts. reserv.
01571132 Supplier Number: 41926504 (USE FORMAT 7 FOR FULLTEXT)
Pyrolysis remains a top recycling option: But licensing, other hurdles delay progress
Plastics News, p21
March 11, 1991
Language: English Record Type: Fulltext
Document Type: Magazine/Journal; Trade
Word Count: 457

... facility in a paper delivered at the SAE Congress.
The proposed facility would be a **closed system**, with the heating of materials taking place in a closed chamber. Volatile chemical products from...

...discreetly for use as a fuel for the process or for industrial heating or for **recycling** into new **polymers**. Fillers and reinforcements - also known as char - would be **recycled** as filler and reinforcements for new thermoset compounds.

The SMC Alliance paper estimated that such...

27/3,K/9 (Item 9 from file: 16)
DIALOG(R)File 16:Gale Group PROMT(R)
(c) 2005 The Gale Group. All rts. reserv.
01839942 Supplier Number: 42327453

Hoechst entwickelt Recycling for Hostaform

Kautschuk & Gummi Kunststoffe, p808

Sept, 1991

Language: German; NONENGLISH Record Type: Abstract

Document Type: Magazine/Journal; Trade

ABSTRACT:

Hoechst (Germany) has carried out successful laboratory tests on a process for **recycling** Hostaform, a technical polyacetal **plastic**. This can now be fully **recycled** with no loss of quality, and there are plans to set up a pilot plant for the procedure within two years. The planned **recycling** system operates in a **closed system**, handling waste from various production and processing activities and used Hostaform pieces...

27/3,K/15 (Item 15 from file: 148)

DIALOG(R)File 148:Gale Group Trade & Industry DB

(c)2005 The Gale Group. All rts. reserv.

07233902 SUPPLIER NUMBER: 15140831 (USE FORMAT 7 OR 9 FOR FULL TEXT)

The fourth 'R': packaging waste management systems must recycle, reduce, reuse and regenerate.

Blakistone, Barbara

Food Processing, v55, n3, p86(2)

March, 1994

ISSN: 0015-6523 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT; ABSTRACT

WORD COUNT: 1065 LINE COUNT: 00088

... Kleenair Products of Oregon. The process heats plastics to nearly 1,000 F in a **closed system** in the absence of oxygen to produce petroleum feedstocks. The super-heated **plastics** melt and condense in a two-stage condenser to form monomer-containing oils. The **plastics** evaluated in 1993 were pre-consumer polystyrene, polyethylene, and polypropylene. It's projected that the Conrad facility's commercial-scale throughput will accommodate processing of a significant volume of **plastics** collected in Oregon and Washington.

Facing facts

Thermoplastics cannot be mechanically recycled indefinitely.

Regeneration methods...

27/3,K/18 (Item 18 from file: 148)

DIALOG(R)File 148:Gale Group Trade & Industry DB

(c)2005 The Gale Group. All rts. reserv.

09185800 SUPPLIER NUMBER: 18954147 (USE FORMAT 7 OR 9 FOR FULL TEXT)

Hull blasting that reuses: a repair yard recycles a plastic medium blast.

(Associated Marine Technologies Inc.)(Clean Marinas - Clear Value)

Boating Industry, v59, n11, pC10(1)

Nov, 1996

ISSN: 0006-5404 LANGUAGE: English RECORD TYPE: Fulltext; Abstract

WORD COUNT: 964 LINE COUNT: 00078

... the boatyard shoots a plastic medium blast (PMB) in a closed system that can be **reused** several times until it wears out. The **plastic** medium is harder than paint and pushes chips off, but is not hard enough to...

File 350:Derwent WPIX 1963-2005/UD,UM &UP=200529

(c) 2005 Thomson Derwent

File 347:JAPIO Nov 1976-2005/Jan(Updated 050506)

(c) 2005 JPO & JAPIO

Set	Items	Description
S1	2355419	RUBBER OR PLASTIC? ? OR POLYMER?? OR ELASTOMER??
S2	1412941	SEPARAT?
S3	78556	NEUTRALIZ? OR NEUTRALIS?
S4	158091	RECYCL? OR REUSE? ? OR REUSING OR REUTILI?
S5	13246	RE() (USE? ? OR USING OR UTILI?)
S6	321601	RECOVER??? OR RECLAIM??? OR SALVAG???
S7	90298	NAOH OR SODIUM()HYDROXIDE OR CAUSTIC() (SODA OR LIQUID? ?) - OR ETCHING()LIQUID? ? OR MOLTEN()PURE()BASE
S8	938409	NA OR SODIUM OR ALKALI()METAL OR ALKALINE OR SALT OR SALTS
S9	971010	CUT OR CUTS OR CUTTING OR CHOP? ? OR CHOPP???
S10	1275469	FRAGMENT? OR PIECE OR PIECES OR PARTICLE? ?
S11	3913417	DECONSOLIDAT? OR REACT? OR REDUC??? OR LIQUIDI? OR (BREAK?- ?? OR BROKEN) (2W)DOWN
S12	515273	MELT??? OR OVEN
S13	803983	REACTOR? ? OR REACTION OR LIQUIDIZ? OR LIQUIDIS? OR DEVULC- ANI?
S14	1251388	SORT???? OR MAGNET?? OR RECOVER?
S15	4391	(CLOSE OR CLOSED) () (SYSTEM? ? OR CIRCUIT()SYSTEM? ?)
S16	438	S1 AND S2 AND S3 AND S4:S6
S17	214972	IC=C08J? OR IC=B29B-017/02
S18	279	S16 AND S7:S8
S19	28	S17 AND S18
S20	35	S9:S10 AND S11 AND S18
S21	6	S17 AND S20
S22	29	S20 NOT S21
S23	924669	S1/TI OR S4/TI OR S5/TI OR S6/TI
S24	9	S22 AND S23
S25	22	S19 NOT (S21 OR S24)
S26	22	S1 AND S2 AND S3 AND S12 AND S13 AND S14
S27	19	S26 NOT (S21 OR S24 OR S19)
S28	13	S4:S6 AND S27
S29	1	S17 AND S28
S30	12	S28 NOT S29
S31	6	S27 NOT S28 [not relevant]
S32	47	S1(S)S4:S6 AND S15
S33	47	S32 NOT (S21 OR S24 OR S19 OR S26)
S34	10	S17 AND S33
S35	8	(S33 AND S7:S8) NOT S34 [not relevant]

21/34/4 (Item 4 from file: 350)

DIALOG(R)File 350:Derwent WPIX

(c) 2005 Thomson Derwent. All rts. reserv.

013145635

WPI Acc No: 2000-317507/200027

Treating polyester includes combining discrete particles of polyester
with an alkaline composition in an environment that is at least free of
water

Patent Assignee: COCA-COLA CO (COKE); CLEANAWAY DEUT & CO AG KG (CLEA-N);
CLEANAWAY DEUT AG & CO KG (CLEA-N)

Inventor: SCHWARTZ J A

Number of Countries: 090 Number of Patents: 016

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200018830	A1	20000406	WO 99US23206	A	19990930	200027	B
AU 9962904	A	20000417	AU 9962904	A	19990930	200035	
US 6147129	A	20001114	US 98164819	A	19981001	200060	
NO 200101606	A	20010522	WO 99US23206	A	19990930	200137	
			NO 20011606	A	20010329		
BR 9914198	A	20010619	BR 9914198	A	19990930	200140	
			WO 99US23206	A	19990930		
EP 1124888	A1	20010822	EP 99950195	A	19990930	200149	
			WO 99US23206	A	19990930		
CZ 200100926	A3	20011114	WO 99US23206	A	19990930	200175	
			CZ 2001926	A	19990930		
KR 2001079974	A	20010822	KR 2001704216	A	20010402	200213	
CN 1321174	A	20011107	CN 99811615	A	19990930	200216	
ZA 200102117	A	20020828	ZA 20012117	A	19990930	200264	
JP 2002525409	W	20020813	WO 99US23206	A	19990930	200267	
			JP 2000572284	A	19990930		
MX 2001003251	A1	20011001	MX 20013251	A	20010329	200274	
AU 760736	B	20030522	AU 9962904	A	19990930	200338	
NZ 510816	A	20030926	NZ 510816	A	19990930	200366	
			WO 99US23206	A	19990930		
EP 1124888	B1	20041208	EP 99950195	A	19990930	200480	
			WO 99US23206	A	19990930		
DE 69922533	E	20050113	DE 99622533	A	19990930	200506	

EP 99950195 A 19990930

WO 99US23206 A 19990930

Priority Applications (No Type Date): US 98164819 A **19981001**

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes

WO 200018830 A1 E 23 C08J-011/06
Designated States (National): AE AL AM AT AU AZ BA BB BG BR BY CA CH CN
CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP
KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG
SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW
Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR
IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW
AU 9962904 A C08J-011/06 Based on patent WO 200018830
US 6147129 A C08J-011/04
NO 200101606 A C08J-000/00
BR 9914198 A C08J-011/06 Based on patent WO 200018830
EP 1124888 A1 E C08J-011/06 Based on patent WO 200018830
Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT
LI LT LU LV MC MK NL PT RO SE SI
CZ 200100926 A3 C08J-011/06 Based on patent WO 200018830
KR 2001079974 A C08J-011/06
CN 1321174 A C08J-011/06
ZA 200102117 A 46 C08J-000/00
JP 2002525409 W 38 C08J-011/16 Based on patent WO 200018830
MX 2001003251 A1 C08J-011/06
AU 760736 B C08J-011/06 Previous Publ. patent AU 9962904
Based on patent WO 200018830
NZ 510816 A C08J-011/06 Based on patent WO 200018830
EP 1124888 B1 E C08J-011/06 Based on patent WO 200018830
Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT

LI LT LU LV MC MK NL PT RO SE SI
DE 69922533 E C08J-011/06 Based on patent EP 1124888
Based on patent WO 200018830

Abstract (Basic): WO 200018830 A1

NOVELTY - Polyester is treated by combining it with **alkaline** composition to coat at least its portion, and the mixture is heated at a temperature not greater than the melting point of the polyester in an environment which is at least free of water.

USE - The method is used for treating polyester. It can be used in **separating** materials such as waste materials containing impurities and/or contaminants from polyester and solid-stating of polyesters. Particularly, this is for **recycling** beverage and food containers, e.g. Coke bottles, rather than incinerating them or disposing them in landfills.

ADVANTAGE - The invention is cost effective and provides a superior polyester product both in terms of intrinsic viscosity and color.

pp; 23 DwgNo 0/1

Technology Focus:

TECHNOLOGY FOCUS - **POLYMERS** - Preferred Polyester: The polyester is or polyethylene naphthalate or preferably polyethylene terephthalate (PET) in the form of **particles**, pellets or flakes.

Preferred Composition: The **alkaline** composition is present in an amount that will **react** with at least 3 wt.% of the polyester.

Preferred Method: The mixture is heated at 200-245degreesC in an environment which contains not more than 80 (preferably not more than 5) ppm of water. The **particles** are dried at 130-160degreesC before heating. Prior to combining stage, the method further comprises immersing the polyester-containing materials in water, **separating** any materials floating in the water from polyester-containing materials, and spin drying the remaining polyester-containing material at 160degreesC. After heating, the polyester is high shear washed, and acid(s) is introduced to **neutralize** any remaining **alkaline** composition.

Extension Abstract:

SPECIFIC COMPOUNDS - The **alkaline** composition is calcium hydroxide, magnesium hydroxide, potassium hydroxide, lithium hydroxide and/or **sodium hydroxide (NaOH)**.

EXAMPLE - 3,000 lbs PET bottles contaminated with polyvinyl chloride (PVC) were ground to 3/8 inches and added to a sink float tank to remove paper and polyolefins. The heavy fraction containing ground PET and PVC was blended with 10 wt.% of 50% **NaOH** solution and then added to a kiln. The material was heated to 250degreesF while maintaining a 600 ft3/min sweep of hot dry air through the kiln (-80degreesF dew pt., and 250degreesF). After 3 h, the moisture level of the flake was 0.2% at which time the flake and air temperature were increased to 400degreesF for 9 h. The material was then cooled and added to a sink float to remove degraded PVC. After sink floating, the heavy fraction was washed for 2 min in a high shear washer, followed by a rinse with a phosphoric acid solution having a pH of 4. After acid rinsing, the material was rinsed with cold water, dried in a spin dryer at 250degreesF to a moisture level of less than 1%, and color sorted to remove any remaining discolored PVC.

Derwent Class: A23; A35

International Patent Class (Main): C08J-000/00 ; C08J-011/04 ;
C08J-011/06 ; C08J-011/16

International Patent Class (Additional): C08L-067/02; C08L-067-02

13/7/2 (Item 2 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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015372153

WPI Acc No: 2003-433091/200341

Processing recyclable abandoned silicone cured substance, involves treating with organic sulfonic acid in non-aqueous solvent, followed by degradation, neutralization, separation of siloxane compound from organic phase

Patent Assignee: SHINETSU CHEM IND CO LTD (SHIE)

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
JP 2002348407	A	20021204	JP 2001155403	A	20010524	200341 B

Priority Applications (No Type Date): JP 2001155403 A 20010524

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 2002348407	A		5	C08J-011/28	

Abstract (Basic): JP 2002348407 A

NOVELTY - Mixture or composite comprising abandoned silicone cured substance is processed with organic sulfonic acid in non-aqueous solvent. The silicone cured substance is degraded into which water, **alkaline** earth, metal oxide and/or metal hydroxide are then added and **neutralized**. The organic phase containing siloxane compound is isolated followed by **separation** of siloxane compound from the organic phase.

DETAILED DESCRIPTION - Mixture or composite comprising abandoned silicone cured substance optionally as main component is processed with organic sulfonic acid in non-aqueous solvent. The silicone cured substance is degraded into which water, **alkaline** earth, metal oxide and/or metal hydroxide are then added and **neutralized**. The organic phase containing siloxane compound is isolated followed by **separation** of siloxane compound from the organic phase.

USE - For processing **recyclable** abandoned silicone cured substance.

ADVANTAGE - The abandoned silicone cured substance is degraded at normal temperature. The substance is processed in a short time and can be easily **recovered** without using special heating apparatus. The method is also eco-friendly and enables to **reduce** industrial waste.

pp; 5 DwgNo 0/0

Derwent Class: A26; A35

International Patent Class (Main): C08J-011/28

International Patent Class (Additional): C08L-019-00; C08L-083-00

13/7/6 (Item 6 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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012532775

WPI Acc No: 1999-338881/199929

Low odor, reusable fiber composite material

Patent Assignee: BASF AG (BADI)

Inventor: MORRISON B R; OFFNER R F E

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
DE 19754447	A1	19990610	DE 1054447	A	19971208	199929 B

Priority Applications (No Type Date): DE 1054447 A 19971208

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
DE 19754447	A1	10	D06M-015/21	

Abstract (Basic): DE 19754447 A1

NOVELTY - A low odor, reusable fiber composite material (I) contains:

(A) a **polymer** having naturalizable acid groups and/or anhydride groups as a binding agent that is water soluble in its **neutralized** form; and

(B) 0.1-30 wt.% activated carbon (wrt the total amount of **polymeric** binding agent).

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for a process for the production of (I) by mixing fibers with an aqueous dispersion of with respect to and (B).

USE - The fiber composite material (I) is useful for a range of industrial goods, clothing, hygiene products and linings.

ADVANTAGE - The composite material (I) has **reduced** odor and is reprocessible to yield the **polymeric** binder.

pp; 10 DwgNo 0/0

Derwent Class: A18; A60; A87; F06

International Patent Class (Main): D06M-015/21

International Patent Class (Additional): C08J-005/02 ; D04H-001/48; D06N-003/04

24/34/8 (Item 8 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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012588738

WPI Acc No: 1999-394845/199933

Recovery of terephthalic acid and ethylene glycol from poly/ethylene terephthalate/ wastes

Patent Assignee: SMUDA H (SMUD-I)

Inventor: SMUDA H

Number of Countries: 038 Number of Patents: 011

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 9928285	A1	19990610	WO 97IB1497	A	19971202	199933 B
AU 9749628	A	19990616	AU 9749628	A	19971202	199945
			WO 97IB1497	A	19971202	
EP 973715	A1	20000126	EP 97912409	A	19971202	200010
			WO 97IB1497	A	19971202	
CN 1245482	A	20000223	CN 97181632	A	19971202	200028
			WO 97IB1497	A	19971202	
KR 2000070689	A	20001125	WO 97IB1497	A	19971202	200131
			KR 99706938	A	19990731	
US 6239310	B1	20010529	WO 97IB1497	A	19971202	200132
			US 99355322	A	19990802	
JP 2001510488	W	20010731	WO 97IB1497	A	19971202	200148
			JP 99530404	A	19971202	
AU 739274	B	20011011	AU 9749628	A	19971202	200171 N
EP 973715	B1	20020807	EP 97912409	A	19971202	200259

WO 97IB1497 A 19971202
DE 69714614 E 20020912 DE 614614 A 19971202 200268
EP 97912409 A 19971202
WO 97IB1497 A 19971202
ES 2182047 T3 20030301 EP 97912409 A 19971202 200327 N
Priority Applications (No Type Date): WO 97IB1497 A **19971202**
Patent Details:
Patent No Kind Lan Pg Main IPC Filing Notes
WO 9928285 A1 E 13 C07C-051/09
Designated States (National): AU CA CN CZ ES HU JP KP KR MX NO NZ PL RU
SG SI SK TR UA US VN
Designated States (Regional): AT BE CH DE DK ES FI FR GB GR IE IT LU MC
NL PT SE
AU 9749628 A Based on patent WO 9928285
EP 973715 A1 E Based on patent WO 9928285
Designated States (Regional): AT BE CH DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE
CN 1245482 A C07C-051/09
KR 2000070689 A C07C-051/09 Based on patent WO 9928285
US 6239310 B1 C07C-051/00 Based on patent WO 9928285
JP 2001510488 W 9 C07C-051/487 Based on patent WO 9928285
AU 739274 B C07C-051/09 Previous Publ. patent AU 9749628
Based on patent WO 9928285
EP 973715 B1 E C07C-051/09 Based on patent WO 9928285
Designated States (Regional): AT BE CH DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE
DE 69714614 E C07C-051/09 Based on patent EP 973715
Based on patent WO 9928285
ES 2182047 T3 C07C-051/09 Based on patent EP 973715
Abstract (Basic): WO 9928285 A1

NOVELTY - **Recovery** of terephthalic acid and ethylene glycol from poly/ethylene terephthalate/ waste, in which the suitably disintegrated wastes of poly/ethylene terephthalate/ are treated with an aqueous, slightly **alkaline** solution at the increased temperature.

DETAILED DESCRIPTION - **Recovery** of terephthalic acid and ethylene glycol from poly/ethylene terephthalate/ waste, in which the suitably disintegrated wastes of poly/ethylene terephthalate/ are treated with an aqueous, slightly **alkaline** solution at the increased temperature. The **reaction** mixture, after **separation** of solid impurities and chilling, is **neutralized** with acid and from the resulted mixture a solid phase is **separated**, which is purified and dried, and from the remained solution ethylene glycol is **separated**. The poly/ethylene terephthalate/ is heated in an aqueous solution at 150 - 280 degreesC with a reagent substance, chosen from bicarbonates of ammonia and alkali metals, ammonium carbamate and urea. The substances are used in amounts not less than a stoichiometric amount.

USE - None given.

ADVANTAGE - The method enables a production of high purity products demanded by the market and it gives a possibility of utilization of wastes, being the durable and noxious pollution of a natural environment.

pp; 13 DwgNo 0/0

Technology Focus:

TECHNOLOGY FOCUS - **POLYMERS** - Preferred Method: The disintegrated poly/ethylene terephthalate is heated in an aqueous solution between 180-200 degreesC. The carbon dioxide formed during the process is

partially absorbed in an alkali solution and **recycled**.

Extension Abstract:

EXAMPLE - In a heated autoclave, 1000 g of **cut** polyethylene terephthalate wastes with a solution of 875 g of **sodium** bicarbonate in 10 l of water were placed. The content of the **reactor** was then heated up to 200degreesC till the digestion of poly/ethylene terephthalate is completed and formation of carbon dioxide was stopped. Then, carbon dioxide and water excess were **separated**. A resulted solution was filtered hot with active carbon. The filtrate was **neutralized** with HCl a terephthalic acid and ethylene glycol were **separated** from a **reaction** solution. 322.6 g of ethylene glycol and 864 g of terephthalic acid were obtained.

Derwent Class: A23; A28; A35; A41; E14; E16; E17; E34; E35

International Patent Class (Main): C07C-051/00; C07C-051/09; C07C-051/487

International Patent Class (Additional): C07C-027/02; C07C-031/20;

C07C-051/42; C07C-063/26

24/34/9 (Item 9 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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012530786

WPI Acc No: 1999-336892/199928

Liquefaction of halogen-containing waste plastic into liquid hydrocarbon for partial oxidation to synthesis gas

Patent Assignee: TEXACO INC (TEXC)

Inventor: BRICKHOUSE P E; KASSMAN J S; KLOCK B V; MAYOTTE G J; STEVENSON J S; TYREE R F; WINTER J D

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5904879	A	19990518	US 9621878	A	19960717	199928 B
			US 9621879	A	19960717	
			US 9621885	A	19960717	
			US 9624472	A	19960823	
			US 97888144	A	19970703	
			US 97908876	A	19970808	

Priority Applications (No Type Date): US 97908876 A 19970808; US 9621878 P 19960717; US 9621879 P 19960717; US 9621885 P 19960717; US 9624472 P 19960823; US 97888144 A 19970703

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5904879	A		7	C07C-001/02	Provisional application US 9621878
					Provisional application US 9621879
					Provisional application US 9621885
					Provisional application US 9624472
					Cont of application US 97888144

Abstract (Basic): US 5904879 A

NOVELTY - Uses integrated liquefaction and gasification to convert particulate halogen-containing waste **plastic** materials into synthesis gas without releasing hazardous materials into the environment.

DETAILED DESCRIPTION - The liquefaction process involves:

(a) melting a halogen-containing bulk waste **plastic** material at atmospheric conditions in a melting zone in direct contact with a hot oil heating medium generated from the waste **plastic** material at first temperature to produce a molten viscous mixture of the material with

the hot oil and a first off gas;

(b) thermally cracking the molten viscous oil/ **plastic** mixture in a heating zone at second temperature to produce a halogen-containing cracked oil of **reduced** viscosity;

(c) partially oxidising the cracked oil in the **reaction** zone of a quench gasifier in which the cracked oil serves as the primary hydrocarbon **reactant** in a non-catalytic partial oxidation **reaction** to produce a synthesis gas containing hydrogen halides; and

(d) quenching the synthesis gas in the quench zone of the gasifier, the synthesis gas being contacted with a quench water containing sufficient **neutralizing** agent to condense and **neutralize** the hydrogen halides in the synthesis gas and thus form condensed halide **salts** which are **separated** and **recovered** from the quench water, and a halogen-free synthesis gas.

USE - For use in conversion of bulk halogen-containing waste **plastics** into synthesis gas and a non-leachable environmentally nontoxic slag.

ADVANTAGE - Integrated process converts waste **plastic** material into synthesis gas with minimal **particle** size reduction or halogen removal prior to liquefaction. Does not release hazardous materials to the environment.

pp; 7 DwgNo 0/0

Technology Focus:

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Process: The waste material is melted in the presence of water to suppress the formation of halohydrocarbon vapours in the first off gas. Part of the cracked halogen containing oil exiting the heater is **separated** and **recycled** to the melting zone to act as the melting medium. Water is supplied in the form of steam, prior to or with the material entering the melting zone. The first off gas is cooled and condensed to form a water miscible condensate, a non-water miscible condensate and a mixture of condensed gases. The condensates are introduced into the **reaction** zone of the quench gasifier. The waste material undergoes minimal size reduction prior to the melting step, and has average **particle** diameter of 2-18 inches. The melting is carried out in the absence of catalyst. The waste material contains 0.5-10 wt.% halogen and is melted at 110-375degreesC and cracked at 360-430degreesC. A second off gas is produced during cracking and is cooled and condensed with the first off gas. A low heating value material selected from water, ash and/or inert gases, preferably water, is introduced into the **reaction** zone of the gasifier to act as temperature moderator. Part of the quench water is continuously removed from the quench zone, based upon the halogen content of the water or of the residual particulates. The thermally cracked oil provides 70-80 wt.% of the hydrocarbonaceous **reactant** for the gasifier.

Derwent Class: A35; E36; H04

International Patent Class (Main): C07C-001/02

International Patent Class (Additional): C01B-007/00

25/34/1 (Item 1 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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016519515

WPI Acc No: 2004-677898/200467

Method for reusing **chloroprene** high polymer

Patent Assignee: HUANG Z (HUAN-I)

Inventor: HUANG Z

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
CN 1485360	A	20040331	CN 2002143635	A	20020925	200467 B

Priority Applications (No Type Date): CN 2002143635 A 20020925

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
CN 1485360	A		C08J-011/04	

Abstract (Basic): CN 1485360 A

NOVELTY - A method of **recycling** high chloroprene **polymer**, which is suitable for producing neoprene by preparing chloroprene from monovinylacetylene. The **recovery** amount is 7-10 of synthesized neoprene. The method comprises: 1) since the specific gravity of a chloroprene derivative is smaller than that of material solution and catalyst, the chloroprene derivative will be **separated** automatically, collecting and **separating** gel, adding an initiating agent and a diffusing agent to form neoprene to be as paints; 2) **neutralization** or displacement reaction in the residual solution after precipitation (containing catalyst), forming ammonium chloride or other chlorides, the catalyst is decomposed into cupric hydroxide complex, which will be forged into cupric oxide with the content more than 90; concentrating solution, getting industrial product of ammonium chloride, the residual solution will be further concentration. CO2 produced could be used to **recycle** and produce **sodium** carbonate

DwgNo 0/0

Derwent Class: A12; A35

International Patent Class (Main): C08J-011/04

International Patent Class (Additional): C08L-047/00

25/34/5 (Item 5 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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015190785

WPI Acc No: 2003-251319/200325

Processing of electroconductive rubber molded product, for recovering electroconductive powder and siloxane rubber, involves immersing waste dispersed with metal alkoxide in water-free non-aqueous solvent

Patent Assignee: SHINETSU CHEM IND CO LTD (SHIE)

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
JP 2002317073	A	20021031	JP 2001120642	A	20010419	200325 B

Priority Applications (No Type Date): JP 2001120642 A 20010419

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
JP 2002317073	A	9	C08J-011/22	

Abstract (Basic): JP 2002317073 A

NOVELTY - Waste material of electroconductive molded silicone **rubber** is dispersed with decomposition promoter such as **alkali metal** alkoxide, and is immersed in water-free non-aqueous solvent. The waste material is processed at 40 degrees C or higher, silicone **rubber** is disassembled and waste material of molded silicone **rubber** is processed.

USE - For **recovering** electroconductive powder and siloxane compound from waste material of molded electroconductive silicone **rubber** products.

ADVANTAGE - The method enables to **recover** electroconductive silicone **rubber** which can be **recycled**. The method eliminates the need for pretreatment steps. The electroconductive silicone **rubber** is processed under mild conditions, hence degradation of electroconductive powder is prevented. The method enables to decrease environmental pollution, and conserve resources.

pp; 9 DwgNo 0/0

Technology Focus:

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Compounds: The non-aqueous solvent is alcohol. The **alkali metal** alkoxide is 3-10C **alkali metal** alkoxide.

Preferred Composition: The molded silicone **rubber** further comprise a non-electroconductive powder.

Preferred Process: The mixture of electroconductive powder and non-electroconductive powder obtained by **neutralization**, is **separated** by specific gravity difference, in a water-based solvent after decomposition of silicone **rubber**.

Extension Abstract:

EXAMPLE - Silicone **rubber** sheet (formed from silica filler; diorgano-polysiloxane crude **rubber** consisting of (CH₃)₂SiO units, (CH₃)(CH₂=CH)SiO units and (CH₃)₂(CH₂=CH)SiO units; Aerosil 200 (RTM); terminal hydroxyl group; dimethyl silicone oil and diphenyl silane diol) containing electroconductive gold-nickel coated silica, was cut into pieces of length 2 cm.

The cut pieces were added to a glass test tube containing isopropanol (3 g) and **sodium** methoxide (0.3 g). The pieces in test tube were allowed to stand at 65 degrees C water bath for 1 hour. The pieces were dehydrated and subsequently **neutralized** with mixture (3 g) containing acetic acid, **sodium** acetate and water in ratio of 1:1:20.

Electroconductive powder and siloxane **rubber** were efficiently **recovered** and **recycled**.

Derwent Class: A26; A35; E12

International Patent Class (Main): C08J-011/22

International Patent Class (Additional): C08L-019-00

25/34/7 (Item 7 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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014465065 **Image available**

WPI Acc No: 2002-285768/200233

Thermal decomposition of medical waste material containing plastics , involves placing lid on waste material thrown into heating container, decomposing waste material and treating gas generated during decomposition

Patent Assignee: MIKKU KK (MIKK-N)

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
JP 2001321750	A	20011120	JP 2000152691	A	20000518	200233 B

Priority Applications (No Type Date): JP 2000152691 A 20000518

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes
JP 2001321750 A 8 B09B-003/00
Abstract (Basic): JP 2001321750 A

NOVELTY - A waste material containing **plastics** (5) is thrown into a heating container (1), and a dropping lid (6) is placed on the thrown waste material. The waste material in the container is then thermally decomposed in anoxia or low oxygen state, and gas is generated. The gas generated during decomposition is absorbed and treated outside the heating container.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following: (i) Thermal decomposition device of waste material containing **plastics**, which comprises a heating container into which a waste material containing **plastics** is thrown. A dropping lid is mounted on the waste material thrown into the heating container. A gas absorption opening (10) is provided in the heating container, through which a gas generated during decomposition is absorbed, and treated outside the heating container; (ii) **Neutralization** tank (20), which **neutralizes** an acidic gas condensate formed by condensation of gas generated during decomposition. The **neutralization** tank has an inclined division plate (22) with several holes, and an insoluble **alkaline** substance (23) deposited on the inclined division plate. An aqueous solution of acidic gas condensate is supplied from the downward portion of division plate, contacted with **alkaline** substance by passing through the holes of the plate, and **neutralized**. The **neutralized** water is then risen above the surface of **alkaline** substance.

USE - For thermally decomposing general and medical waste materials containing **plastics**.

ADVANTAGE - The thermal decomposition apparatus has simple structure, and small size. The waste material containing **plastics** can be decomposed with high efficiency, after volume reduction and detoxification. The acidic solution can be **neutralized** efficiently without stirring. Maintenance of **neutralization** tank is easy.

DESCRIPTION OF DRAWING(S) - The figure shows the schematic diagram of thermal decomposition device of waste material containing **plastics**. (Drawing includes non-English language text).

Heating container (1)
Waste material containing **plastics** (5)
Dropping lid (6)
Gas absorption opening (10)
Neutralization tank (20)
Inclined division plate (22)
Alkaline substance (23)
pp; 8 DwgNo 1/3

Technology Focus:

TECHNOLOGY FOCUS - MECHANICAL ENGINEERING - Preferred Apparatus:
The dropping lid is descended in the heating container until the apparent specific gravity of the waste material is set to 0.1-0.7.

Preferred Method: The gas generated during decomposition is condensed, and **separated** into acidic water phase and oil phase. The oil phase is **recovered**, and the acidic water phase is **neutralized**. The non-aggregate formed during condensation, is absorbed and decomposed.

Derwent Class: A35; H09; P43
International Patent Class (Main): B09B-003/00
International Patent Class (Additional): C08J-011/12 ; C10B-053/00;

C10G-001/10

25/34/9 (Item 9 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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014119099 **Image available**

WPI Acc No: 2001-603311/200169

Cleaning PET drinks bottles comminuted to plastic flakes, for direct recycling , employs intensive, protracted hot alkaline wash

Patent Assignee: KRONES AG (KROE); KLENK K (KLEN-I)

Inventor: KLENK K

Number of Countries: 095 Number of Patents: 014

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
DE 10002682	A1	20010802	DE 10002682	A	20000124	200169 B
WO 200155250	A1	20010802	WO 2001EP526	A	20010118	200169
AU 200135427	A	20010807	AU 200135427	A	20010118	200174
BR 200104175	A	20011218	BR 20014175	A	20010118	200209
			WO 2001EP526	A	20010118	
EP 1165675	A1	20020102	EP 2001907461	A	20010118	200209
			WO 2001EP526	A	20010118	
KR 2001104383	A	20011124	KR 2001712142	A	20010924	200231
CN 1362976	A	20020807	CN 2001800307	A	20010118	200304
US 20030010360	A1	20030116	WO 2001EP526	A	20010118	200308
			US 2001937388	A	20011220	
ZA 200107966	A	20030326	ZA 20017966	A	20010927	200327
JP 2003523295	W	20030805	JP 2001561096	A	20010118	200353
			WO 2001EP526	A	20010118	
MX 2001009675	A1	20030701	WO 2001EP526	A	20010118	200366
			MX 20019675	A	20010924	
US 6770680	B2	20040803	WO 2001EP526	A	20010118	200451
			US 2001937388	A	20011220	
EP 1165675	B1	20041027	EP 2001907461	A	20010118	200471
			WO 2001EP526	A	20010118	
DE 50104271	G	20041202	DE 104271	A	20010118	200479
			EP 2001907461	A	20010118	
			WO 2001EP526	A	20010118	

Priority Applications (No Type Date): DE 10002682 A 20000124

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
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DE 10002682	A1		8	C08J-011/04	
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WO 200155250	A1	G		C08J-011/14	
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Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA
CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP
KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT
RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR
IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW

AU 200135427	A			C08J-011/14	Based on patent WO 200155250
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BR 200104175	A			C08J-011/14	Based on patent WO 200155250
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EP 1165675	A1	G		C08J-011/14	Based on patent WO 200155250
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Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT
LI LT LU LV MC MK NL PT RO SE SI TR

KR 2001104383	A			C08J-011/14	
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CN 1362976	A			C08J-011/14	
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US 20030010360 A1 B08B-009/20
ZA 200107966 A 27 C08J-000/00
JP 2003523295 W 22 B29B-017/02 Based on patent WO 200155250
MX 2001009675 A1 B29B-017/00 Based on patent WO 200155250
US 6770680 B2 C08J-011/04 Based on patent WO 200155250
EP 1165675 B1 G C08J-011/14 Based on patent WO 200155250
Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LI
LU MC NL PT SE TR
DE 50104271 G C08J-011/14 Based on patent EP 1165675
Based on patent WO 200155250

Abstract (Basic): DE 10002682 A1

NOVELTY - The flakes are treated hydraulically and mechanically in a washer (W). Washing takes place at over 70degreesC for longer than 20 minutes, in a **caustic soda** cleaning solution.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for the corresponding treatment plant.

USE - To clean PET flakes produced by comminuting drinks bottles, for **recycling**.

ADVANTAGE - The flakes are so purified, that even the direct manufacture of new bottles from them, is feasible. The processing conditions are sufficient to **separate** all current commercially-available labels from the bottles. Only the slightest additional processing is then required. The surface quality resulting from the process is outstanding. Though a superficially expensive operation and plant, this is more than compensated by the results, and absence of further processing. Accent is laid on thorough initial treatment, in contrast with prior art processes.

DESCRIPTION OF DRAWING(S) - A schematic flow diagram is sketched.

separator (C)

neutralizer (G)

dosing station (41, H)

heater (P)

washer (W)

sieving and filtration equipment (30, 32, 33, 35)

pp; 8 DwgNo 2/2

Technology Focus:

TECHNOLOGY FOCUS - ELECTRONICS - Preferred Features: The treatment time is preferably about 30 minutes; the temperature about 95degreesC. A conventional **caustic soda** cleaning solution is employed to wash the polyethylene terephthalate (PET) bottles. Residence time is considerably increased, at about 50% greater than normal wash times. The concentration and temperature are both increased beyond normal values. The washer is stirred and has high pressure sprays. In the washer or subsequently, sieving and/or filtration take place (30, 32, 33, 35). Additive(s) are introduced into the solution. The cleaned flakes are then **separated** in a float/sink **separator**, still in the cleaning solution. They are then washed thoroughly in the same solution. A slight variant is described. Following washing, the solution is **separated** from the flakes and **recycled**. Concentration of the wash fluid is monitored continuously and adjusted by dosing. The washer is heated (P). In the plant, also claimed, the following features are noted. A **neutralizer** (G) is connected to a towns water- and an acid- or CO2 dosing station (41, H). A further fresh water supply (18) is provided for the float/sink tank. A heavy materials **separator** (C) precedes the washer. The washer is designed for a treatment time of preferably about 30 minutes.

A heater and an electropneumatic control system are included.
Further common electrically-driven equipment is included e.g. pumps and stirrer motors
Derwent Class: A23; A35; P41; P43
International Patent Class (Main): B08B-009/20; B29B-017/00; **B29B-017/02** ;
C08J-000/00 ; **C08J-011/04** ; **C08J-011/14**
International Patent Class (Additional): B03B-005/00; B03B-005/28;
B03B-009/06; B08B-003/02; B08B-003/08; B08B-003/10; B08B-003/14;
B08B-009/08; B29K-067-00; C08G-063/90

25/34/11 (Item 11 from file: 350)
DIALOG(R)File 350:Derwent WPIX
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013909649
WPI Acc No: 2001-393862/200142
Regeneration of plastic having inner plated layer such as compact discs and vehicle component, involves dissolving plated layer by acidic liquid
Patent Assignee: HINOMARU GOSEI JUSHI KOGYO KK (HINO-N)
Number of Countries: 001 Number of Patents: 001
Patent Family:
Patent No Kind Date Applicat No Kind Date Week
JP 2001121539 A 20010508 JP 99310314 A 19991029 200142 B
Priority Applications (No Type Date): JP 99310314 A 19991029
Patent Details:
Patent No Kind Lan Pg Main IPC Filing Notes
JP 2001121539 A 4 B29B-017/02
Abstract (Basic): JP 2001121539 A
NOVELTY - Regeneration of **plastic** having inner plated layer, involves exposing portion(s) of plated layer and dissolving the exposed plated layer portion using acidic liquid.
DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following: (i) Acidic liquid processing method which involves **neutralizing** acidic liquid by adding **neutralizing** agent, **separating** precipitate from **neutralized** liquid and drying the precipitate. The dried precipitate is added to **plastic** ; and (ii) **Salt** added **plastic** which includes precipitate obtained after acidic liquid **neutralization** .
USE - For regenerating **plastic** having inner plated layer such as compact disc used for personal computers and computer games. For **recycling** motor vehicle component such as bumper and wheel cap consisting of acryl butadiene styrene resin.
ADVANTAGE - The method is eco-friendly, and enables **recycle** of **plastic** waste without affecting its appearance and physical properties. The acidic liquid resists bursting due to hydrogen gas generation, hence corrosion of surrounding metal is suppressed.
pp; 4 DwgNo 0/1

Technology Focus:

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Composition: The exposed portion of plated layer is dissolved by acidic liquid containing polyalcohol. The acidic liquid processed is mixture of formic acid used for plated layer dissolution and wash water used for washing **plastic** after plated layer removal.

Extension Abstract:

EXAMPLE - Compact disc comprising aluminum plated layer and printed layer on polycarbonate resin substrate, was ground. 200 kg of ground

material was placed within net-like container and immersed in acidic liquid consisting of 10L of glycerol and 1000 L of solution comprising 10 vol% of 35% hydrochloric solution, and 75 vol% of formic acid solution. The plated layer of **plastic** was completely dissolved and resin printing layer was peeled off. The **plastic** was removed from acidic liquid and washed several times with water. The **plastic** was dehydrated, melted and made into colored pellets. The pellets were used as raw material for **plastic** molded products. The diluted acidic liquid was **neutralized** with 25% aqueous **caustic soda** solution and the precipitate formed was **separated**. The precipitate was dried, and was found to contains calcium carbonate and aluminum. The dried precipitate was added to **plastic**, and **salt** added **plastic** was manufactured. The **salt** added **plastic** was found to have better physical properties and shock resistance when compared to **plastic** devoid of **salt**.

Derwent Class: A35; P43

International Patent Class (Main): **B29B-017/02**

International Patent Class (Additional): B09B-003/00; C02F-001/66;
C08K-003/24; C08L-101/00

25/34/12 (Item 12 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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013362452

WPI Acc No: 2000-534391/200049

Process for recycling carpet comprising synthetic fibers and a vinyl acetate copolymer binder, comprises dissolving the binder in a hot alkaline solution, separating the fibers and acidifying the solution to precipitate the binder

Patent Assignee: DIDDI & GORI SPA (DIDD-N)

Inventor: DIDDI G

Number of Countries: 025 Number of Patents: 002

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 1026195	A2	20000809	EP 2000830023	A	20000118	200049 B
IT 1310003	B	20020205	IT 99FI20	A	19990201	200240

Priority Applications (No Type Date): IT 99FI20 A 19990201

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
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EP 1026195	A2	E	3	C08J-011/16	
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Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT
LI LT LU LV MC MK NL PT RO SE SI

IT 1310003	B			D06M-000/00	
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Abstract (Basic): EP 1026195 A2

NOVELTY - Used carpet comprising a layer of a non-woven fabric of synthetic fibers and a layer of a binder containing a specified (co) **polymer** of vinyl acetate may be **recycled** by dissolving the binder in a hot **alkaline** solution, **separating** the solution from the fibers by centrifuging, and acidifying the solution to precipitate the binder.

DETAILED DESCRIPTION - A process for **recycling** used carpet comprising a layer of a needle-punched non-woven fabric of a synthetic fiber and a layer of binder applied onto its face, the binder containing an aqueous suspension of an inert charge and a vinyl resin, which is made of poly(vinyl acetate), optionally copolymerized with ethylene, a vinyl ester of a 1-20C carboxylic acid, (meth)acrylic acid

or esters with 1-20C alcohols, itaconic acid, maleic and/or fumaric esters of 1-20C alcohols, 50-100% hydrolyzed poly(vinyl alcohols), and has a viscosity of 5-50 mPa.second as a 4% aqueous solution; comprises: (a) contacting the used carpet, shredded into strips, with a hot **alkaline** washing solution for sufficient time to dissolve the binder layer; (b) **separating** the washing solution from the fiber layer by centrifuging; (c) acidifying the solution to a pH of 7-10 to precipitate the binder; and (d) **separating** the washing solution from the precipitated binder.

USE - For **recycling** textile floor coverings, particularly wall-to-wall carpeting, as an alternative to dumping them in a landfill site.

ADVANTAGE - The process **separates** the textile fibers from the binder of a carpet without damaging the fibers forming the needle-punched layer, and allows their **reuse**. The process does not use highly toxic materials or particularly severe conditions.

pp; 3 DwgNo 0/0

Technology Focus:

TECHNOLOGY FOCUS - **POLYMERS** - Preferred Process: The **alkaline** solution is **sodium hydroxide** solution of pH at least 14. The treatment temperature is 60-90degreesC. The binder is precipitated using ammonium chloride or an equivalent acid reagent. The washing water **separated** from the particulates is **neutralized** prior to being returned to the process water circuit. The used carpet is graded by color and traces of double-sided tape and coarse dirt are removed before step (a). The precipitated binder is **reused** in binder compositions for textile floor coverings or for other uses.

Extension Abstract:

EXAMPLE - Used carpet containing 40 wt.% polypropylene carpet fibers and a binder layer of poly(vinyl acetate) containing aluminum carbonate (filler) and dimethylphthalate (plasticizer) was shredded into large strips and coarse dirt was removed. The carpet (80 kg) was processed in a Ulivelli 120 (RTM) industrial washing machine with 10% **sodium hydroxide** solution (400 l) at 90degreesC for 45 minutes to dissolve the binder layer completely. The solution of binder was **separated** from the fibers, which were rinsed with cold water (250 l). Rinse water was added to the binder solution with ammonium chloride (20 l), the stoichiometric amount to obtain a neutral pH value and cause complete precipitation of the binder and the filler. Almost all of the polypropylene fibers could be **reused** as feedstock for producing other covering materials. The water from the washing and rinsing solutions was returned to the process water circuit.

Derwent Class: A35; A84; F06

International Patent Class (Main): C08J-011/16 ; D06M-000/00

International Patent Class (Additional): C08J-011/06 ; C08L-023-02;
C08L-031-04

25/34/13 (Item 13 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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013076285

WPI Acc No: 2000-248157/200022

Production of an organosilicon resin and a process for producing a polyurethane foam in which the organosilicon resin, which is compatible with the premix, gives improved dimensional stability

Patent Assignee: SHINETSU CHEM CO LTD (SHIE); SHINETSU CHEM IND CO LTD
(SHIE)

Inventor: ASAI M; KUDO M; MORIOKA S

Number of Countries: 027 Number of Patents: 007

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 989151	A2	20000329	EP 99118449	A	19990917	200022 B
JP 2000095865	A	20000404	JP 98266846	A	19980921	200027
US 6124369	A	20000926	US 99397635	A	19990916	200051
US 6166163	A	20001226	US 99397635	A	19990916	200103
			US 2000593058	A	20000613	
JP 3523081	B2	20040426	JP 98266846	A	19980921	200428
EP 989151	B1	20040609	EP 99118449	A	19990917	200438
			EP 20043059	A	19990917	
DE 69917854	E	20040715	DE 99617854	A	19990917	200446
			EP 99118449	A	19990917	

Priority Applications (No Type Date): JP 98266846 A 19980921

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes

EP 989151 A2 E 4 C08G-077/06

Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT
LI LT LU LV MC MK NL PT RO SE SI

JP 2000095865 A 6 C08G-077/06

US 6124369 A C08G-018/61

US 6166163 A C08G-077/06 Div ex application US 99397635

JP 3523081 B2 6 C08G-077/06 Previous Publ. patent JP 2000095865

EP 989151 B1 E C08G-077/06 Related to application EP 20043059

Related to patent EP 1424353

Designated States (Regional): DE FR GB

DE 69917854 E C08G-077/06 Based on patent EP 989151

Abstract (Basic): EP 989151 A2

NOVELTY - A process for the production of an organosilicon resin in which a mixture of silane compounds are equilibrated with an acid, hydrolysed with water and then subjected to a condensation reaction by adding aqueous alkali. The organosilicon is added to a composition containing a polyol, a polyisocyanate, a catalyst and a surfactant to form a stable mix, which is processed by blowing and curing to produce a polyurethane foam with improved dimensional stability.

DETAILED DESCRIPTION - The organosilicon resin with structural units:

R1SiO1/2 (a),

R2SiO3/2 (b), and

SiO4/2 (c)

R1=1-6C monovalent hydrocarbon group;

R2=1-20C monovalent hydrocarbon group

is produced by subjecting a mixture of:

Si(OR3)4 (I),

R2(SiOR4)3 (II), and

R1SiX (III)

or hydrolysis-condensation products of them

R3 and R4=1-6C monovalent hydrocarbon group;

X=-OH, -OSiR13 or a hydrolyzable group

to an equilibration reaction with acid. To the product of this reaction, water is added to give the hydrolysis product which is then subjected to treatment with aqueous alkali to carry out the condensation reaction.

USE - The composition can be used to make polyurethane foams by low and high pressure foaming techniques as well as free foaming, spray foaming, frothing, or non-frothing.

ADVANTAGE - The premix composition has good storage stability and does not need agitation before use.

pp; 4 DwgNo 0/0

Technology Focus:

TECHNOLOGY FOCUS - **POLYMERS** - Preferred Composition: Silane compound (II) is preferably a mixture where part has R₂=methyl and part has R₂=3-10C monovalent hydrocarbon groups. Silane compound (I) is preferably selected from tetramethoxysilane, tetraethoxysilane, tetrapropoxysilane, tetrabutoxysilane, or hydrolysis products methyl silicate or ethyl silicate. Silane compound (III) is preferably trimethylsilanol, triethylsilanol, trimethylchlorosilane, triethylchlorosilane, trimethyl-methoxysilane, trimethyl-ethoxysilane, trimethylsilyl-dimethylamine, trimethylsilyl-diethylamine, trimethyl-acetoxysilane, or hexamethyldisiloxane. The preferred acid for the equilibration reaction is sulfonic or sulfuric acid (0.5-2 wt. % based on weight of silane compounds). The water is added at 0.5-1.5 moles per mole of hydrolyzable groups contained in the mixture of silane compounds. The preferred aqueous alkali for the condensation step is KOH, **NaOH**, ammonia, dimethylamine, diethylamine. The silane compound (II) contains 0.5-1 moles of (b) per mole of (c) in silane compound (I), and silane compound (III) contains 0.5-1.5 moles of (a) per mole of SiO₂ unit in silane compound (I). In each case the silane compound may be replaced by its hydrolysis-condensation product. The organosilicon resin is used at 0.1-20 parts per hundred parts of polyol. The composition also contains catalyst (0.0001-0.1 pts), water (0.0001-0.1 pts), and surfactant (0.001-0.5 pts). The polyisocyanate is present in an amount to give an isocyanate index of 50-150.

Extension Abstract:

EXAMPLE - Hexamethyldisiloxane (73.6 g) was mixed with hexyl trimethoxysilane (16.5 g), a hydrolysis-condensation product of methyltrimethoxysilane (96.7 g), ethyl polysilicate (150 g), methanesulfonic acid (4.21 g), and isopropyl alcohol (37.4 g). The mixture was kept at 40 degrees C for 2 hours during which an equilibration reaction was completed and then water (68.3 g) was added and a hydrolysis reaction carried out at 70 degrees C for 2 hours. Xylene (111 g) was added to the reaction product followed by an aqueous 50% solution of potassium hydroxide to promote a condensation reaction which was conducted for 8 hours at 72-78 degrees C. At that point the alcohol was evaporated and the reaction mix heated to 135-142 degrees C and held there for a further 10 hours. The organosilicon resin (70 g) was **recovered** following **neutralization** and washing. The organosilicon resin (0.5 pts) was dissolved in decamethylcyclopentasiloxane (0.5 pts) which was added to a pre-mix of a polyol (100 pts), tetramethyl-hexamethylene-diamine (1.7 pts) as the catalyst, water (6.2 pts) as a blowing agent, a surfactant (1 pt), and a foam stabilizer. The premix was stored for 3 days at 50 degrees C without any sign of **separation**, unlike a control that used an organosilicon resin which was prepared without any of the (b) and (c) units in the resin.

Derwent Class: A25; A26

International Patent Class (Main): C08G-018/61; C08G-077/06

International Patent Class (Additional): C08G-018/00; **C08J-009/00** ;

C08G-101-00

25/34/14 (Item 14 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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012786838

WPI Acc No: 1999-593065/199951

Decomposition treatment method for a waste article made of cured thermosetting resin

Patent Assignee: MATSUSHITA ELECTRIC IND CO LTD (MATU); MATSUSHITA DENKI SANGYO KK (MATU)

Inventor: ONISHI H; TERADA T

Number of Countries: 029 Number of Patents: 006

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 953418	A2	19991103	EP 99303242	A	19990427	199951 B
CN 1233624	A	19991103	CN 99105368	A	19990427	200011
JP 2000198877	A	20000718	JP 99110084	A	19990416	200040
KR 99083527	A	19991125	KR 9915017	A	19990427	200055
US 6245822	B1	20010612	US 99299049	A	19990423	200135
KR 353282	B	20020918	KR 9915017	A	19990427	200317

Priority Applications (No Type Date): JP 98312925 A 19981104; JP 98116591 A 19980427

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 953418	A2	E	20	B29B-017/02	
Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI					
CN 1233624	A			C08J-011/18	
JP 2000198877	A		16	C08J-011/10	
KR 99083527	A			C08J-011/18	
US 6245822	B1			C08J-011/04	
KR 353282	B			C08J-011/18	Previous Publ. patent KR 99083527

Abstract (Basic): EP 953418 A2

NOVELTY - Decomposition treatment of a waste article comprising cured thermosetting resin comprises:

(a) contacting the waste article with a decomposing fluid containing a solvent which is capable of decomposing the resin when heated in a decomposition bath; and

(b) heating the fluid at a temperature not lower than 250 degreesC and lower than the critical temperature of the solvent.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for an apparatus for use in the above method comprising a decomposition bath, a heating means, a second bath for **separating** solids from liquids present in a mixture obtained in the decomposition bath and a third bath for dissolving and **separating** residual solids obtained in the second bath.

USE - The method is used to decompose and **recycle** articles made of thermosetting resin such as molded motors or transformers containing metal components, and laminated resin articles such as printed circuit boards bearing a copper pattern and a mounted electronic device.

ADVANTAGE - The waste article can be decomposed, **recycled** and **reused** as resources.

DESCRIPTION OF DRAWING(S) - The diagram represents a schematic vertical sectional view of an apparatus for decomposition treating articles made from cured thermosetting resin.

pp; 20 DwgNo 0/3

Technology Focus:

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Solvent: The solvent is ethylene glycol, propylene glycol, diethylene glycol, dipropylene glycol, isoprene glycol, triethylene glycol, tetraethylene glycol, 2-methoxyethanol, 2-dimethoxyethanol, 2-isopropoxyethanol, 2-butoxyethanol, 2-iso-pentyloxyethanol, 2-hexyloxyethanol, 2-phenoxyethanol, 2-benzyloxyethanol, 1-methoxy-2-propanol, 1-ethoxy-2-propanol, diethylene glycol monomethyl ether, diethylene glycol monoethyl ether, diethylene glycol monobutyl ether, dipropylene glycol monomethyl ether, dipropylene glycol monoethyl ether, triethylene glycol monomethyl ether or tripropylene glycol monomethyl ether. Alternatively, the solvent may be tetralin, biphenyl, naphthalene, 1,4-hydroxynaphthalene, naphthol, 1,4-naphthoquinone, pitch, creosote oil, methyl isobutyl ketone, isophorone, 2-hexanone, 2-heptanone, 4-heptanone, diisobutyl ketone, acetonyl acetone, phorone, cyclohexanone, methylcyclohexanone or acetophenone.

Preferred Decomposition Fluid: The fluid contains calcium oxide (preferably not more than 10 parts by weight) and/or an antioxidant or reducing agent. The antioxidant or reducing agent may be hydroquinone, methoquinone, benzoquinone, naphthoquinone, butyl catechol, butyl hydroquinone, **sodium** hypophosphite, **sodium** thiosulfate or ascorbic acid.

POLYMERS - Preferred Materials: The cured thermosetting resin is an unsaturated polyester resin, cured epoxy resin, cured phenol resin or cured polyurethane resin. The waste article is a molded motor or transformer containing a metallic component, or is a laminated resin article obtained by laminating and molding prepregs, each of which is prepared by impregnating with a thermosetting resin, at least one base material selected from fabrics or non-woven fabrics made of glass fiber, polyester fiber, acrylic fiber or aramid fiber, paper such as mica paper or linter paper, cotton fabric and asbestos. The laminated resin article may be a printed circuit board having a copper pattern formed on it and an electronic device mounted on it.

Preferred Method: The decomposing fluid is brought into contact with the waste article after vaporization. The method further involves removing oxygen from the decomposition bath after step (a) and before step (b) by displacement with nitrogen gas and/or evacuating the bath to reduce the internal pressure. The solvent decomposes the cure thermosetting resin by solvolysis or catalytic action. The method further comprises the step of (f) **neutralizing** the decomposing fluid, which contains calcium oxide, by adding carbon dioxide to the solution obtained in step (a). Step (b) is followed by the steps: (c) **separating** solids from liquids in a mixture of the heated cured thermosetting resin and the decomposing fluid; (d) obtaining a solution by dissolving the **separated** solid contents; and (e) **separating** residual solid contents from the solution. The **separated** solid contents are dissolved in acetone, acetyl acetone, acetaldehyde, ethyl acetoacetate, methyl acetoacetate, methyl ethyl ketone, diethyl ketone, methyl isobutyl ketone, methyl isopropyl ketone, dimethyl sulfoxide, dimethyl formamide, ethyl acetate, isopropyl acetate, butyl acetate, tetrahydrofuran, dioxane, diethyl ether, water, ethanol and/or methanol in step (c).

Preferred Apparatus: The apparatus further comprises a means for feeding the waste article and the decomposing fluid, a means for mixing and continuously extruding the fed waste article and solvent and a

means for heating the waste article and solvent in the mixing and extruding means

Extension Abstract:

EXAMPLE - Unsaturated alkyd (65 parts by weight), prepared from phthalic anhydride, fumaric anhydride and propylene glycol, was mixed with styrene (35 pts wt), and then the polymerization inhibitor methoxyhydroquinone (0.01 pts wt) was added. The mixture was stirred and dissolved at room temperature to give an unsaturated polyester resin. Meanwhile, polydipropylene adipate (36 pts wt) was mixed with 2-hydroxyethyl methacrylate (64 pts wt) to produce a shrinkage controlling agent. The shrinkage controlling agent (26 pts wt) and the polymerization initiator 1,1-(t-butylperoxy)3,3,5-trimethylcyclohexane (1 pt wt) were added the unsaturated polyester resin (74 pts wt). The mixture was mixed to produce a liquid resin composition. In the next step, calcium carbonate filler (17.8 pts wt), aluminum hydroxide (48.5 pts wt), zinc stearate releasing agent (1.5 pts wt) and powdered carbon colorant (0.4 pts wt) were dry blended for 5 minutes. The blended mixture was kneaded by gradually adding the previously prepared resin composition (22 pts wt) to produce a homogeneously pasty mixture. Glass fibers (9.8 pts wt) were evenly dispersed in the mixture. The resulting composition was compression molded onto a cured thermosetting resin cylinder of diameter 20 mm at 250 degreesC under a pressure of 35 kgf/cm². The test samples thus prepared were dipped in a decomposing fluid containing only propylene glycol for 5 hours at different temperatures. When treated at 250-350 degreesC, the decomposing fluid penetrated deep into the cured thermosetting resin, the penetration rate was high and the hardness of the resin decreased remarkably, unlike in the comparative example at 150-200 degreesC.

Derwent Class: A35; E19; E34

International Patent Class (Main): B29B-017/02 ; C08J-011/04 ; C08J-011/10 ; C08J-011/18

International Patent Class (Additional): C08F-283/01; C08J-011/24 ; C08L-055/00; C08L-061/06; C08L-061/20; C08L-063/00; C08L-067/06; C08L-075/04; C08L-087/00; H02K-005/02

25/34/15 (Item 15 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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012776320

WPI Acc No: 1999-582546/199950

Process for the recycling of silicon resin containing polyamide material used in automotive front air bags

Patent Assignee: RUEB HOLDING GMBH F A (RUEB-N)

Inventor: BAQUE T

Number of Countries: 025 Number of Patents: 006

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 950684	A2	19991020	EP 99107111	A	19990412	199950 B
DE 19817160	A1	19991021	DE 198017160	A	19980417	199950
DE 19817160	C2	20010517	DE 198017160	A	19980417	200128
EP 950684	B1	20040407	EP 99107111	A	19990412	200425
DE 59909079	G	20040513	DE 99509079	A	19990412	200434
			EP 99107111	A	19990412	

ES 2218899 T3 20041116 EP 99107111 A 19990412 200477

Priority Applications (No Type Date): DE 198017160 A 19980417

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes
EP 950684 A2 G 3 C08J-011/06
Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT
LI LT LU LV MC MK NL PT RO SE SI
DE 19817160 A1 C08J-011/16
DE 19817160 C2 C08J-011/16
EP 950684 B1 G C08J-011/06
Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT
LI LT LU LV MC MK NL PT RO SE SI
DE 59909079 G C08J-011/06 Based on patent EP 950684
ES 2218899 T3 C08J-011/06 Based on patent EP 950684
Abstract (Basic): EP 950684 A2

NOVELTY - A process for the **recycling** of silicon resin containing polyamide material (I) comprises:

(A) treatment of (I) with an **alkali hydroxide solution** and heating;
(B) **separation** of the resulting solid materials from the solution; and

(C) treatment of the **separated** material with phosphoric acid.

USE - The process is useful for the **recycling** of silicon resin polyamide material used in automobile front air bags.

ADVANTAGE - The process allows the **recycling** of the polyamide material.

pp; 3 DwgNo 0/0

Technology Focus:

TECHNOLOGY FOCUS - **POLYMERS** - Preferred Process: Step (A) is carried out in the presence of surfactants and the solution heated to b.pt. The material is dried and granulated after step (C). The material is rinsed between steps (B) and (C)

Extension Abstract:

EXAMPLE - Air bag waste (4 kg) was cut in a mill and mixed with 10 l of hot 25% **sodium hydroxide** after removal of metal parts. The mixture was heated at b.pt. for 30 minutes followed by removal of the solution and washing with water containing 1 % ethanol for 10 minutes. The wash water was drawn off and **neutralized** with 5 % phosphoric acid for 2 minutes. Following a further washing, the suspension was centrifuged and dried. The polyamide pieces were extruded and the resulting product had similar properties to newly produced polyamide.

Derwent Class: A21; A26; A35; A95; F07; F08; Q17

International Patent Class (Main): **C08J-011/06** ; **C08J-011/16**

International Patent Class (Additional): B60R-021/16; C08L-077/00;
C08L-077-00; C08L-083/14

25/34/16 (Item 16 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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011693590

WPI Acc No: 1998-110500/199810

Liquefaction of halogen-containing bulk waste plastics - by melting with hot oil at first temperature, cracking at second temperature, and using cracked oil as reactant in non-catalytic partial oxidation reaction to synthesis gas for quenching

Patent Assignee: TEXACO DEV CORP (TEXC)

Inventor: BRICKHOUSE P E; KASSMAN J S; KLOCK B V; MAYOTTE G J; STEVENSON J S; TYREE R F; WINTER J D; VON KLOCK B

Number of Countries: 067 Number of Patents: 015

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 9802401	A1	19980122	WO 97US12480	A	19970714	199810	B
AU 9737309	A	19980209	AU 9737309	A	19970714	199823	
ZA 9706277	A	19981125	ZA 976277	A	19970716	199901	
EP 946468	A1	19991006	EP 97934193	A	19970714	199946	
			WO 97US12480	A	19970714		
AU 713393	B	19991202	AU 9737309	A	19970714	200008	
CN 1258271	A	20000628	CN 97196448	A	19970714	200050	
KR 2000023759	A	20000425	KR 99700225	A	19990114	200107	
MX 9900648	A1	19991201	MX 99648	A	19990115	200110	
JP 2001520684	W	20011030	WO 97US12480	A	19970714	200202	
			JP 98506293	A	19970714		
TW 445273	A	20010711	TW 97110459	A	19970722	200221	
MX 203416	B	20010801	MX 99648	A	19990115	200238	
KR 311754	B	20011103	KR 99700225	A	19990114	200240	
EP 946468	B1	20030423	EP 97934193	A	19970714	200329	
			WO 97US12480	A	19970714		
DE 69721302	E	20030528	DE 621302	A	19970714	200343	
			EP 97934193	A	19970714		
			WO 97US12480	A	19970714		
ES 2198000	T3	20040116	EP 97934193	A	19970714	200413	

Priority Applications (No Type Date): US 97888144 A 19970703; US 9621878 P 19960717; US 9621879 P 19960717; US 9621885 P 19960717

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 9802401	A1	E	22	C07C-001/02	
Designated States (National): AM AT AU BB BG BR BY CA CH CN CZ DE DK EE ES FI GB GE HU JP KE KG KP KR KZ LK LR LT LU LV MD MG MN MW MX NO NZ PL PT RO RU SD SE SI SK TJ TT UA US UZ VN					
Designated States (Regional): AT BE CH DE DK EA ES FI FR GB GH GR IE IT KE LS LU MC MW NL OA PT SD SE SZ UG ZW					
AU 9737309	A			C07C-001/02	Based on patent WO 9802401
ZA 9706277	A		22	C10J-000/00	
EP 946468	A1	E		C07C-001/02	Based on patent WO 9802401
Designated States (Regional): DE ES FR GB IT NL SE					
AU 713393	B			C07C-001/02	Previous Publ. patent AU 9737309 Based on patent WO 9802401
CN 1258271	A			C07C-001/02	
KR 2000023759	A			C07C-001/02	
MX 9900648	A1			C07C-001/02	
JP 2001520684	W		20	C08J-011/10	Based on patent WO 9802401
TW 445273	A			C08J-011/00	
MX 203416	B			C07C-001/02	
KR 311754	B			C07C-001/02	Previous Publ. patent KR 2000023759
EP 946468	B1	E		C07C-001/02	Based on patent WO 9802401
Designated States (Regional): DE ES FR GB IT NL SE					
DE 69721302	E			C07C-001/02	Based on patent EP 946468 Based on patent WO 9802401
ES 2198000	T3			C07C-001/02	Based on patent EP 946468

Abstract (Basic): WO 9802401 A

A liquefaction process for converting a halogen-containing bulk waste **plastic** material into a liquid hydrocarbonaceous feedstock for partial oxidation to produce a synthesis gas in a quench gasifier containing a reaction zone and a quench zone, involves: (a) introducing

the **plastic** material into a melting zone in direct contact with a hot oil heating medium at first temperature sufficient to produce a molten viscous mixture of the **plastic** material with hot oil, and a first offgas, (b) introducing the molten mixture into a heating zone at a second temperature sufficient to produce a halogen containing cracked oil composition of reduced viscosity, (c) introducing the cracked oil into the reaction of a quench gasifier where it serves as the primary hydrocarbonaceous reactant in a non catalytic partial oxidation reaction to produce a synthesis gas comprising gases selected from carbon monoxide, hydrogen, carbon dioxide, water vapour, hydrogen sulphide, carbonyl sulphide, hydrogen halides and methane, and a vitreous nontoxic slag, and (d) introducing the synthesis gas into the quench zone of the gasifier where it is contacted with a quench water containing a **neutralising** agent to **neutralise** the hydrogen halides and form condensed halide **salts** which are **separated** and **recovered** from the quench water, and a halogen free synthesis gas.

USE - For liquefaction of halogen containing bulk **plastics** waste to valuable gas products and slag.

ADVANTAGE - Utilises waste **plastics** materials to produce valuable synthesis gas and a non leachable environmentally non toxic slag.

Dwg.0/1

Derwent Class: A35; E36; H04

International Patent Class (Main): C07C-001/02; **C08J-011/00** ; **C08J-011/10** ; C10J-000/00

International Patent Class (Additional): **C08J-011/14** ; C10G-001/00; C10G-001/10

25/7/21 (Item 1 from file: 347)

DIALOG(R)File 347:JAPIO

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06894030 **Image available**

REGENERATION OF **PLASTICS** , TREATMENT OF ACIDIC LIQUID IN WHICH META IS DISSOLVED AND **SALT** ADDED **PLASTICS**

PUB. NO.: 2001-121539 [JP 2001121539 A]

PUBLISHED: May 08, 2001 (20010508)

INVENTOR(s): ASAKURA TSUTOMU

TAKAHASHI TOSHIHIRO

APPLICANT(s): HINOMARU GOSEI JUSHI KOGYO KK

APPL. NO.: 11-310314 [JP 99310314]

FILED: October 29, 1999 (19991029)

ABSTRACT

PROBLEM TO BE SOLVED: To **recycle** waste of **plastics** without exerting effect on appearance and physical properties to contribute to preservation of environment.

SOLUTION: **Plastics** having a plating layer therein are crushed and the plating layer is dissolved in an acidic liquid containing polyhydric alcohols. A **neutralizing** agent is mixed with the acidic liquid in which the metal of the plating layer is dissolved to **neutralize** the acidic liquid and the precipitate generated by **neutralization** is **separated** from the **neutralized** liquid to be dried. The dried precipitate is added to **plastics** .

COPYRIGHT: (C) 2001, JPO

25/7/22 (Item 2 from file: 347)

DIALOG(R)File 347:JAPIO

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01602654 **Image available**

RECOVERING PROCESS

PUB. NO.: 60-081154 [JP 60081154 A]

PUBLISHED: **May 09, 1985** (19850509)

INVENTOR(s): TAKEUCHI YOSHIO

YAMAMURA YOSHIO

MATSUMOTO TAKAO

APPLICANT(s): UBE IND LTD [000020] (A Japanese Company or Corporation), JP
(Japan)

APPL. NO.: 58-189940 [JP 83189940]

FILED: October 13, 1983 (19831013)

ABSTRACT

PURPOSE: To **recover** a tetracarboxylic acid and an aromatic diamine from off- grade aromatic polyimide, in high yield, by hydrolyzing the polyimide in the presence of excess **alkali** at a specific temperature, and **neutralizing** the resultant tetracarboxylic acid and aromatic diamine with excess alkali and acid to effect the precipitation and **separation** of the compounds.

CONSTITUTION: An off-grade aromatic polyimide of formula (R and R' are aromatic ring) is hydrolyzed at 150-230c in the presence of 4.0-4.8mol of an alkali (e.g. **sodium hydroxide**) based on 1mol of the polyimide unit until the imide bond is essentially completely broken. The produced aromatic tetracarboxylic acid and aromatic diamine are dissolved in an alkali solution and acid solution, respectively, decolorized with activated carbon, and added with more than **neutralization** equivalents of acid and alkali to make the solutions to acidic and **alkaline**, respectively. The precipitated aromatic carboxylic acid the aromatic diamine are **recovered** by removing the entrained diamine and carboxylic acid components.

29/34/1 (Item 1 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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013882925 **Image available**

WPI Acc No: 2001-367138/200138

Degradation of plastic waste material comprises pyrolysis to convert synthetic macromolecules containing polyolefins to produce hydrocarbon mixture for use as fuel

Patent Assignee: JUILLET H (JUIL-I); CIE DU DEV DURABLE SA (DURA-N); C2D

CIE DU DEV DURABLE SA (CTWO-N)

Inventor: JUILLET H; MALINOVA A; POINT J

Number of Countries: 018 Number of Patents: 003

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 200118152	A1	20010315	WO 2000FR2456	A	20000906	200138 B
FR 2799763	A1	20010420	FR 9911254	A	19990906	200138
FR 2804687	A1	20010810	FR 20001414	A	20000204	200147

Priority Applications (No Type Date): FR 20001414 A 20000204; FR 9911254 A 19990906

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
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WO 200118152	A1	F	37	C10G-001/10	
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Designated States (Regional): AT BE CH CY DE DK ES FI FR GB GR IE IT LU
MC NL PT SE

FR 2799763	A1	C08J-011/10
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FR 2804687 A1 C08J-011/12

Abstract (Basic): WO 200118152 A1

NOVELTY - The process involves the conversion of synthetic macromolecules containing polyolefins, e.g. polyethylene, polypropylene and also including polyvinyl chloride.

DETAILED DESCRIPTION - **Plastic** waste is first **melted** in a heated stirred vessel (1) and the fluid obtained is heated in a primary **reactor** into which a carrier gas (such as N₂) is introduced. The mixture is then dechlorinated before passing into a secondary **reactor** (10) comprising a cracking tower in which pyrolysis takes place. The gaseous product obtained passes to a **separator** -condenser (12) which effects a **separation** into a heavy solid hydrocarbon fraction, a light viscous liquid fraction and a gaseous fraction containing the carrier gas and gaseous hydrocarbons. The non-condensable gases are **recovered** for burning off in a boiler producing vapor actuating a turbine coupled with an alternator, to conserve the energy of the process.

An INDEPENDENT CLAIM is also included for the apparatus for the above process.

USE - Pyrolytic degradation of **plastic** materials to form a hydrocarbon mixture usable as a fuel, particularly for the conversion of thermoplastics including polyethylene (PE), polypropylene (PP), polyethylene terephthalate (PET), polystyrene (PS) and polyvinyl chloride (PVC). The process degrades macromolecular synthetic compounds **sorted** form e.g. urban wastes, composted refuse, and agricultural cloth.

ADVANTAGE - Gaseous and liquid products are obtainable by working at moderate temperatures and without the use of water vapor. The method does not require an impurities **separation** stage, or pre-mixing with products such as paraffin, or the addition of vegetable or hydrocarbon oils. The treatment can deal with **plastic** waste containing up to 10% of PVC or polyesters.

DESCRIPTION OF DRAWING(S) - The figure shows the process stages. (Drawing includes non-English language text).

Plastic material waste (1)
Fluidization (2)
Chlorine extraction (3)
Maturation (4)
Reheating (5)
Cracking (6)
Vitrification (7)
Vitrified residue (8)
Phase **separation** (9)
Hydrochloric acid (10)
Fractional condensation (11)
Hydrocarbons (12)
pp; 37 DwgNo 4/9

Technology Focus:

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Process: The sequence of operations is as follows: fluidization of the **plastic** waste (1), dechlorination of the fluid obtained (2), **separation** of gases and acid obtained in an auxiliary condenser (5), partial decomposition of the fluid in a maturation vessel (8), re-heating and pyrolysis (10) by microwave action, transformation of non-condensable cracked gases on alumina balls mixed with inert balls, fractionated condensation of hydrocarbons obtained after catalytic treatment and finally extraction of the refuse from cracking and **neutralization** in

a vitrification furnace. The primary **reactor** comprises 3 **reactors** each being a vertical stainless steel autoclave internally coated with a layer of Teflon (RTM) fitted with stirrers and regulated at 320 degrees C and each functioning cyclically (filling, extraction and emptying). The maturation vessels are similarly constructed and regulated at 385 degrees C. The cracking tower comprises a large cylindrical vessel internally coated with vitreous steel and provided with an external heating ring; it is extended in the form of an inverse truncated cone towards the base. The upper part is in the form of a borosilicate or quartz cupola which is inserted in a metallic coffer comprising the cavity of a microwave furnace. The coffer is electrically sealed by a Faraday grille situated inside the vessel below the surface of the primary fluid. A quartz tube is arranged vertically in the center which contains a catalyst and exit channel. The gases produced by cracking are engulfed in the tube containing the catalyst and are transformed into a condensable fraction. The catalyst comprises 5 mm diameter aluminum balls treated to form a layer of alumina with a core of aluminum reactive to microwaves, the balls being mixed with other inert balls of glass, quartz or ceramic. Ultrasonic generators with penetrating sonotrodes are also disposed around the body of the cracking tower. In an alternative form of the process, the **plastic** waste material is slowly heated from 20 to 300-350 degrees C in a primary **reactor** into which an inert gas is injected to transport gaseous products obtained across a calci-filter (to **neutralize** Cl₂ and HCl) and to a second **reactor** partially filled with an inert charge, to effect a thermolysis at 400-575 degrees C before passing to a **separator** -condenser. The temperature in the calci-filter is 250-350 degrees C, and the carrier gas is injected at pressure less than or equal to 1 atmosphere, the pressure in the second **reactor** being the same. The time for the products to pass through the second **reactor** varies from a few minutes to an hour, depending on the composition of the products required. The charges of the calci-filter and the second **reactor** comprise milled oyster shells. The first **reactor** is of a transfer screw-type and comprises a mechanical exit filter; the second **reactor** has an endless screw mixer. The gaseous fraction of the products obtained is **separated** from the carrier gas by cooling to -60 degrees C or less, or by dissolution in a solvent.

Extension Abstract:

EXAMPLE - A material for treatment comprised a mixture of 54% PE, 21% PP, 8% PS, 6% PVC, 6% PET and 5% residues..The flow rate of primary material was 1 tonne/h. From an initial supply of 1000 kg, a condensed fraction containing 664 kg of hydrocarbons and 109 kg of gas was obtained from the cracking unit. 141 kg of solid waste was vitrified to give a vitrified residue of 43 kg. The process temperatures at the stages of fluidization, chlorine extraction, maturation, and cracking were respectively 175 degrees C, 320 degrees C, 385 degrees C, and 418-400 degrees C.

Derwent Class: A35; H06; H09

International Patent Class (Main): C08J-011/10 ; C08J-011/12 ; C10G-001/10

International Patent Class (Additional): C10G-001/00; C10L-001/00; C10L-003/00; C10L-005/00

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009618848 **Image available**

WPI Acc No: 1993-312397/199340

Treating residues contg. metals and organic matter - by pyrolysis, metal sepn. and gasification to obtain fuel gas

Patent Assignee: VAW ALUMINIUM AG (VALC); THYSSEN STILL ANLAGENTECHNIK GMBH OTTO (THYS); STILL GMBH OTTO (SILC)

Inventor: DOBERT H; KREBBER F; ROSSEL H

Number of Countries: 011 Number of Patents: 005

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
DE 4209549	A1	19930930	DE 4209549	A	19920324	199340 B
EP 563777	A2	19931006	EP 93104882	A	19930324	199340
EP 563777	A3	19931118	EP 93104882	A	19930324	199512
EP 563777	B1	19960529	EP 93104882	A	19930324	199626
DE 59302721	G	19960704	DE 502721	A	19930324	199632
			EP 93104882	A	19930324	

Priority Applications (No Type Date): DE 4209549 A 19920324

Cited Patents: EP 120397; EP 55840; FR 2261974; GB 1479257; GB 2068014; US 4229185; WO 9002162; WO 9104306

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 4209549	A1		5	C10J-003/64	
EP 563777	A2	G		C10J-003/66	
EP 563777	B1	G	8	C10J-003/66	

Designated States (Regional): AT BE DE ES FR GB GR IT NL PT SE

DE 59302721 G C10J-003/66 Based on patent EP 563777

EP 563777 A3 C10J-003/64

Abstract (Basic): DE 4209549 A

Thermal treatment of residues, e.g. for sepn. and **recycling** of metal mixts. contg. organic matter, involves (a) pyrolysing the residues at 300-700 deg. C to **separate** and convert the residues into a gaseous phase and a solid phase; and (b) after removal of valuable products, gasifying the residual solid phase, together with the gaseous phase, at above 1300 deg. C with oxygen-enriched air or oxygen to product fuel gas.

USE/ADVANTAGE - The process is useful for treating residues from the **separate** collection or **sorting** of packaging materials or prodn. residues. It provides extremely good utilisation of the energy potential of the organic matter, **separates** the valuable materials (metals), destroys or **neutralises** the noxious matter potential of the residues, suppresses formation of new noxious substances and produces little waste. By-products of the process are a slag, which can be utilised in the same way as blast furnace slag, and a fluel gas which covers the heating requirements of the pyrolysis furnace and a furnace for **melting** the sepd. metal fraction, excess fuel gas being supplied to other energy consumers and/or being used for prodn. of chemical raw materials.

Dwg.0/1

Abstract (Equivalent): EP 563777 B

A process of producing synthetic gas by thermally treating residual materials containing metallic and organic constituents, especially for treating packaging materials consisting of aluminium and **plastics**, with the residual materials being opened up in a pyrolysis **reaction**, being **separated** into a gas phase and solid substance phase and with the **separated** solid substance phase being fed into a gasification

stage and being gasified with oxygen-enriched air or oxygen, characterised in that the residual materials are heated in a **pyrolysis reaction** at a temperature of 300-500 deg. C until the chloro-organic hydrocarbons have been transferred completely into the gas phase; that after **separation** of the metallic constituents, the remaining solid substance phase is gasified in the gasification stage at temperatures ranging between 1450 and 1850 deg. C under reducing conditions; that the ash components occurring in the gasification stage are extracted in the form of a vitrified slag;; and that, in a decomposition stage, with water vapour being added simultaneously, the gas phase leaving the pyrolysis, together with the gases which occurred in the gasification stage, are converted into synthetic gas at temps. ranging between 800 and 1250 deg. C.

(Dwg.1/1

Derwent Class: H06; Q73

International Patent Class (Main): C10J-003/64; C10J-003/66

International Patent Class (Additional): C02F-001/04; C10J-003/62;

F23G-005/027

34/34/8 (Item 8 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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001386471

WPI Acc No: 1975-36160W/197522

Recovering polyester and silver from photographic film - by treating with alkaline org solvent

Patent Assignee: HORIZONS INC (HORI)

Number of Countries: 004 Number of Patents: 004

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
DE 2357977	A	19750522				197522 B
JP 50080371	A	19750630				197535
GB 1445168	A	19760804				197632
CA 1019900	A	19771025				197745

Priority Applications (No Type Date): DE 2357977 A 19731121

Abstract (Basic): DE 2357977 A

Pure polyester is **recovered** separately from other materials present in photographic film or magnetic recording tape, by (1) wetting the film with an **alkaline** org. liq., pref. aq., which loosens the impurities or foreign matter from the polyester film base, (2) sepg. the polyester from the soln. and the impurities, and (3) **recovering** the purified polyester. A single treatment gives **recovery** of (a) polyester and (b) a slurry contg. Ag. The solvent can be **recycled** in a **closed system**, avoiding atmos. contamination. The polyester is partic. polyethylene terephthalate. The coatings on the base contain minerals, binders, waxes and oils, and a subbing layer, e.g. of a vinyl(idene) chloride **copolymer**, may be present.

Derwent Class: A23; A35; A89; G06; M25

International Patent Class (Additional): C08G-063/12; **C08J-011/04** ;

C08L-067/00

34/7/9 (Item 1 from file: 347)

DIALOG(R)File 347:JAPIO

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06723037 **Image available**
TREATMENT OF PLASTIC WASTE BY SUPERCRITICAL WATER
PUB. NO.: 2000-308875 [JP 2000308875 A]
PUBLISHED: November 07, 2000 (20001107)
INVENTOR(s): TABATA MASATAKA
 HAMADA TAKAYOSHI
 MATSUBARA WATARU
 SAITO YOSHIHISA
 MORIYA TAKEHIKO
 KAMIYOSHI HIDEKI
 KAMIMURA KAZUHIDE
APPLICANT(s): TOHOKU ELECTRIC POWER CO INC
 MITSUBISHI HEAVY IND LTD
APPL. NO.: 11-117617 [JP 99117617]
FILED: April 26, 1999 (19990426)

ABSTRACT

PROBLEM TO BE SOLVED: To provide a method for treating **plastic** waste by supercritical water in which waste water, or the like, generated by supercritical treatment are treated to **reuse** them in a system without causing secondary pollution and the whole process containing waste treatment and waste water treatment is made into the **closed system**.
SOLUTION: This treating method comprises a **plastic** waste adjusting step 1 for fluidizing the **plastic** waste 11, a reaction step 2 for decomposing the fluidized **plastic** waste 11 by supercritical water, a separation step 3 for separating a reaction liquid 16 discharged from the reaction step 2, a separated water treating step 4 for decomposing water-soluble organic compounds contained in the separated water 19 discharged from the separation step 3 to convert them into inflammable gases 20.
COPYRIGHT: (C)2000,JPO

34/7/10 (Item 2 from file: 347)
DIALOG(R)File 347:JAPIO
(c) 2005 JPO & JAPIO. All rts. reserv.
06128836 **Image available**
METHOD AND APPARATUS FOR TREATING THERMOPLASTIC PLASTIC-METAL COMPOSITE MATERIAL
PUB. NO.: 11-070373 [JP 11070373 A]
PUBLISHED: March 16, 1999 (19990316)
INVENTOR(s): SEKIGUCHI YOSHITOSHI
 SASAKI KUNIO
 FURUBAYASHI MICHITAKA
APPLICANT(s): HITACHI ZOSEN CORP
APPL. NO.: 09-233454 [JP 97233454]
FILED: August 29, 1997 (19970829)

ABSTRACT

PROBLEM TO BE SOLVED: To provide a method and an apparatus for treating a thermoplastic metal composite material being a **closed system** which does not put out anything except valuable articles.
SOLUTION: A cylindrical molten **plastic** falling down passage 4 connected with the bottom end of a waste storing chamber 3 as in a downward extended shape and penetrating the bottom wall of a dry distillation furnace 1 is provided. The bottom end opening of the molten **plastic** falling down passage 4 is water-sealed by a water tank 33 for cooling the molten **plastic**. An org. substance discharging line 37 for taking out org.

substances accumulated on the bottom part of this water tank 33 with cooling water and ejecting this into a combustion furnace 11 is provided. After **recovered** molten **plastic** is ground, fine particles in the ground product are fed in the dry distillation furnace 1 and are melted again.

COPYRIGHT: (C)1999,JPO

File 34:SciSearch(R) Cited Ref Sci 1990-2005/May W1

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File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec

(c) 1998 Inst for Sci Info

File 323:RAPRA Rubber & Plastics 1972-2005/Apr

(c) 2005 RAPRA Technology Ltd

File 8:Ei Compendex(R) 1970-2005/May W1

(c) 2005 Elsevier Eng. Info. Inc.

File 40:Enviroline(R) 1975-2005/Apr

File 35:Dissertation Abs Online 1861-2005/Apr

(c) 2005 ProQuest Info&Learning

Set	Items	Description
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S1	7	AU=DEBAILLEUL G? OR AU=DEBAILLEUL, G?
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S2	6	RD (unique items) [not relevant]
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S3	0	DEBAILLEUL
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File 635:Business Dateline(R) 1985-2005/May 10

(c) 2005 ProQuest Info&Learning

File 476:Financial Times Fulltext 1982-2005/May 11

(c) 2005 Financial Times Ltd

File 477:Irish Times 1999-2005/May 11

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File 710:Times/Sun.Times(London) Jun 1988-2005/May 09

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File 756:Daily/Sunday Telegraph 2000-2005/May 11

(c) 2005 Telegraph Group

File 757:Mirror Publications/Independent Newspapers 2000-2005/May 11

(c) 2005

File 481:DELPHES Eur Bus 95-2005/May W1

(c) 2005 ACFCI & Chambre CommInd Paris

File 148:Gale Group Trade & Industry DB 1976-2005/May 11

(c)2005 The Gale Group

Set	Items	Description
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S1	0	GERARD(1W)DEBAILLEUL
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S2	7	DEBAILLEUL
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S3	7	RD (unique items) [not relevant]
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File 350:Derwent WPIX 1963-2005/UD,UM &UP=200529

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File 349:PCT FULLTEXT 1979-2005/UB=20050505,UT=20050428

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File 348:EUROPEAN PATENTS 1978-2005/May W01

(c) 2005 European Patent Office

Set	Items	Description
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S1	11	AU='DEBAILLEUL G' OR AU='DEBAILLEUL G J' OR AU='DEBAILLEUL GERARD' OR AU='DEBAILLEUL GERARD JEAN-MARIE'
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1/3,AB,IC/1 (Item 1 from file: 350)

DIALOG(R)File 350:Derwent WPIX

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012541595

WPI Acc No: 1999-347701/199929

XRAM Acc No: C99-102381

Recycling rubber products e.g. tyres

Patent Assignee: DEBAILLEUL G (DEBA-I); DEBAILLEUL G J (DEBA-I)

Inventor: **DEBAILLEUL G**

Number of Countries: 083 Number of Patents: 013

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 9927004	A1	19990603	WO 98BE180	A	19981120	199929 B
AU 9914765	A	19990615	AU 9914765	A	19981120	199944
BE 1011558	A7	19991005	BE 97933	A	19971120	199950
EP 1032611	A1	20000906	EP 98958741	A	19981120	200044
			WO 98BE180	A	19981120	
NO 200002564	A	20000630	WO 98BE180	A	19981120	200045
			NO 20002564	A	20000519	
SK 200000765	A3	20001107	WO 98BE180	A	19981120	200102
			SK 2000765	A	19981120	
CZ 200001854	A3	20010214	WO 98BE180	A	19981120	200119
			CZ 20001854	A	19981120	
HU 200004444	A2	20010428	WO 98BE180	A	19981120	200131
			HU 20004444	A	19981120	
AU 742733	B	20020110	AU 9914765	A	19981120	200217
EP 1032611	B1	20040728	EP 98958741	A	19981120	200452
			WO 98BE180	A	19981120	
DE 69825311	E	20040902	DE 98625311	A	19981120	200457
			EP 98958741	A	19981120	
			WO 98BE180	A	19981120	
IL 136258	A	20040927	IL 136258	A	19981120	200478
ES 2226192	T3	20050316	EP 98958741	A	19981120	200525

Priority Applications (No Type Date): BE 97933 A 19971120

Patent Details:

Patent No Kind Lan Pg Main IPC Filing Notes

WO 9927004 A1 F 22 C08J-011/16

Designated States (National): AL AM AT AU AZ BA BB BG BR BY CA CH CN CU
CZ DE DK EE ES FI GB GE GH GM HR HU ID IL IS JP KE KG KP KR KZ LC LK LR
LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM
TR TT UA UG US UZ VN YU ZW

Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR
IE IT KE LS LU MC MW NL OA PT SD SE SZ UG ZW

AU 9914765 A C08J-011/16 Based on patent WO 9927004

BE 1011558 A7 C08J-000/00

EP 1032611 A1 F C08J-011/16 Based on patent WO 9927004

Designated States (Regional): AT BE CH DE DK ES FI FR GB GR IE IT LI LU
NL PT SE

NO 200002564 A C08J-000/00

SK 200000765 A3 C08J-011/16

CZ 200001854 A3 C08J-011/16 Based on patent WO 9927004

HU 200004444 A2 C08J-011/16 Based on patent WO 9927004

AU 742733 B C08J-011/16 Previous Publ. patent AU 9914765

Based on patent WO 9927004

EP 1032611 B1 F C08J-011/16 Based on patent WO 9927004

Designated States (Regional): AT BE CH DE DK ES FI FR GB GR IE IT LI LU
NL PT SE

DE 69825311 E C08J-011/16 Based on patent EP 1032611

Based on patent WO 9927004

IL 136258 A B29B-017/02 Based on patent WO 9927004

ES 2226192 T3 C08J-011/16 Based on patent EP 1032611

Abstract (Basic): WO 9927004 A1

Abstract (Basic):

NOVELTY - Chopped rubber materials is broken down in a liquid, and the liquid and solid fragments are separated. The fragments are neutralised, and further separated from liquid.

DETAILED DESCRIPTION - Separation of the components of reinforced and vulcanised rubber materials (especially pneumatic tyres) for recycling comprises chopping into 10-25 cm long pieces. The pieces are broken down in a liquid, and the liquid and solid fragments are separated. The fragments are neutralised, and further separated from liquid. The recovered fragments are sorted into metallic and synthetic components for recycling or revaluation.

An INDEPENDENT CLAIM is also included for an assembly where the packaged NaOH is combined (1). The chopped rubber fragments are fed to a reactor (13) for immersion in a liquid to separate the rubber and non-rubber components followed by a stage (19-21) where the liquid and material components are separated. The separated fragments are neutralised (24-26) before recycling or revaluation. The neutralised matter is separated into metal and polymer fractions.

USE - Used for recycling the reinforced rubber materials, used in tyres (claimed) of all types and sizes, belts and inflatable boats.

ADVANTAGE - The technique disposes of, e.g., used tyres, without excessive energy and without environmental pollution, yielding material which can be recycled and reused.

DESCRIPTION OF DRAWING(S) - The drawing shows a schematic view of the assembly.

NaOH supply station (1)
reactor (13)
stirring unit (16)
sealed reactor entry (17)
liquid and solid separation stage (19, 20)
filter (21)
sealed reactor outlet (22)
vat (23)
neutralising stage (24-26)
mixture point (27)
spray extension (28)
extracted matter (31)
precipitation and particle cleaners (38-42)
compressed air supply (44)
pp; 22 DwgNo 1/3

International Patent Class (Main): B29B-017/02; C08J-000/00; C08J-011/16

International Patent Class (Additional): B29B-017/02